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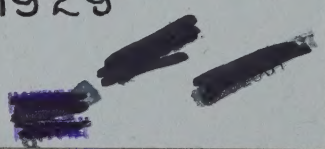

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INDEX TO VOLUME II., 1929.

REFERENCES AND ABBREVIATIONS

Readers in search of a given subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral, Heart and Cardiac, Liver and Hepatic, Child and Infant, Goitre and Thyroid, Diabetes, Glycosuria and Sugar, Eye, Ophthalmic, and Vision, Lunacy and Mental Disease, Arsenobenzol and Salvarsan, &c., &c., and that regional headings are more frequently used than pathological. Institutions and Corporations with the right to the prefix Royal will be found under that prefix, with the exception of Hospitals, which will be found under that heading; and Medical Societies, which are separately indexed under Societies. All Universities are indexed under the word University. (A.) = Annotation, (C.) = Correspondence, (N.I.) = New Inventions, (L.A.) = Leading Article, (M.L.) = Medico-legal, (M.T.T.) = Modern Technique in Treatment, (O.) = Obituary, (P.I.) = Parliamentary Intelligence, (R.) = Review, (R. and A.R.) = Reports and Analytical Records, (A.D.) = Clinical Interpretation of Aids to Diagnosis, and (N.P.) = New Preparations.

A Concordance of page numbers and dates of Issue will be found at the end of the Index.

A

Abbott, Maude E., Clinical classification of congenital cardiac disease, 164
Abdomen, upper, place of surgery in lesions of, 903
Abdominal aortic aneurysm, case of (John K. Rennie), 923; cyst in a young child, an uncommon (A. H. D. Smith), 65; pain, significance of afferent impulses from the skin in the mechanism of (John Morley), 1240, discussion on, 226; surgery, some principles in (D. P. D. Wilkie) (Murphy oration), 803; tenderness and unnecessary operations, 740; (C.), 794
Abortion, contagious (C.), 953; among dairy cattle (P.I.), 1122; and Malta fever (P.I.), 307; prevention of, in cattle (P.I.), 1287
Abortion, early, and sterility, causes of, discussion on, 874; "incomplete," admission of to hospitals: should guardians be told? (A.), 1206
Accidents: are they a disease (A.), 886; in mines (P.I.), 1064; road, hospitals and, 50; (P.I.), 307, 956; 531, 649, 786, 962, 1035, 1280, 1290, 1395; stationary cars and (P.I.), 1066
Acclimatisation (A.), 622
Acid base balance in the blood, significance of (John R. Marrack) (A.D.), 512, 569
Acoustic tumours, diagnosis of, 1260
Actinic erythema, effect of radiant heat on the production of (F. Mackenzie Shattock and Mary D. Waller), 917
Actinotherapy: some clinical results of treatment (Albert Eidinow), 649
Adam, James, on treatment of asthma, 498
Addison, C., The Nation and its Food (R.), 54
Address, change of, our (A.), 676
Adenoids, medical and surgical aspects of, discussion on, 335
Adie, W. J., on diagnosis of frontal tumours, 662; on diseases of the pituitary body, 876
Adkins, retirement of Dr. George, 1392
Adler, Alfred, The Case of Miss R. (R.), 828
Adoption of children in Scotland (P.I.), 103
Africa and science (L.A.), 179
After-treatment of Operations (P. Lockhart-Mummery), 5th ed. (R.), 931
Agassiz, C. D., on the diagnosis of intrathoracic tuberculosis in children, 38
Air, clean (A.), 1271; evacuation of wounded by (A.), 1269; la cure d', 1074
Aircraft pilots, public, health of (P.I.), 1232
Airmen, standards of fitness in (A.), 511
Aitken, D. McCrae, on scoliosis, 284
Albuminuria of pregnancy, preventive treatment of, 501
Alcohol, methylated spirits and impure forms of, toxic effects of, discussion on, 124
Alexander, F. W., clean swimming baths (C.), 953; The new vaccination order (C.), 528
Alexander, Hanns, Was muss der praktische Arzt von der Chirurgischen Behandlung der Lungentuberkulose Wissen? (R.), 1148
Alexander, R. Charles, Accessory spleen with recurring torsion of its pedicle, 21
Alexander, Ruth, Stones, Hilltops, and the Sea (R.), 232
Alexandra Day Fund, record collection, 958
Alimentary tract, interpretation of radiograms of the (A. E. Barclay) (A.D.), 1158, 1210, 1272, 1322, 1377
Allen, I. M., and Worster-Drought, C., Thrombosis of superior cerebellar artery, 1137
Allbutt, Sir Clifford: A Memoir (Sir Humphry D. Rolleston) (R.), 1044
Almanack, Whitaker's, 1292
Almoners under the Local Government Act, 903
Alpine cures, assisted (A.), 343
Alport, A. Cecil, On Nephritis (R.), 1368
Aluminium silicate in the treatment of gastric ulcer (A.), 621
Alveoli of maxilla, implantation of epithelioma of, from primary growth in tongue (J. Bagot Oldham), 873
American Chemical Society monographs, 559; College of Surgeons: annual clinical congress (A.), 81; Medical Association: annual Convention, 353
Amino-Acids, Biochemistry of the (H. H. Mitchell and T. S. Hamilton) (R.), 559
Amœbiasis, hepatic, simulating cholecystitis (Ian Macdonald), 171; intestinal, symptomatology of (Philip Manson-Bahr and C. B. V. Tait), 1028
Anæmia, chlorotic, in the middle-aged (A.), 937; in school-children, diagnosis and treatment of, with special reference to hæmoglobin content (Nancy K. Gibbs), 550; (C.), 850; pernicious (A.), 563; importance of transfusion in the treatment of (Alexander Goodall and A. M. Calder), 1144; influence of liver treatment on mortality from (Peter L. McKinlay), 1086; insulin in the treatment of (L. von Varga), 764; nervous and mental aspects of (Douglas McAlpine), 643; stomach in (L.A.), 829; which resists liver treatment (A.), 935
Anaerobic bacteria, persistence of, in war wounds (R. J. V. Pulvertaft), 924
Anaerobiosis, objectionable, 208
Anæsthesia, The Art of (P. J. Flagg), 4th ed. (R.), 882; diffusion, of the peritoneal cavity, 1110, 1180; ethylene and oxygen, 557; gas and oxygen, in midwifery, 558; in rectal surgery, discussion on, 1258; Local, Practical (Robert Emmett Farr), 2nd ed. (R.), 1199; nitrous oxide, electrocardiographic study of human heart during and after (G. E. S. Ward and Samson Wright), 1184; rectal ether oil, with special reference to brain surgery, 558; spinal, with spinocain, 825
Anæsthetic for childbirth, another (A.), 835; local, another, 1074
Anæsthetic sickness, post-, ætiology and prophylaxis of (J. Ross Mackenzie), 1299
Anæsthetics, Handbook of (J. Stuart Ross and H. P. Fairlie), 3rd ed. (R.), 178; scientific administration of, 558
Analysis of Drugs and Chemicals (Norman Evers and G. D. Elsdon) (R.), 882
Anatomy and Physiology for Nurses, Elementary (P. M. Lodge) (R.), 1264; and the Problem of Behaviour (G. E. Coghill) (R.), 127; Comparative, Laboratory Manual for (Malcolm E. Little and Rudolf T. Kempton) (R.), 718
Anderson, John H., Cholecystography (A.D.), 400; Examination of the blood for bile-pigment (A.D.), 346
Aneurysm, abdominal aortic, case of (John K. Rennie), 923
Anglo-French Library of medical and biological science (C.), 410
Animal diseases, the study of, 191
Animals, experiments on (P.I.), 153; (A.), 296
Antenatal clinics (A.), 295
Anthracosis, miners and (P.I.), 308
Anthrax, reported cases of (P.I.), 1122
Anthropology and Modern Life (F. Boas) (R.), 178
Antivivisection meeting, disturbances at a (P.I.), 101, 202
Aortic disease, hard work and, 1218
Apicolysis, 1324
Apothecary, Mystery and Art of the (C. J. S. Thompson) (R.), 931
Appeal, doctor's successful (M.L.), 1325
Appendicitis, complications and mortality of (Richard Warren), 16; in pregnancy (A.), 510
Appendix, interpretation of radiograms of the (A. E. Barclay) (A.D.), 1322; shield (A. Ernest Sawday)* (N.I.), 128
Appetising preparations, 534
Appetite, loss of, in childhood (A.), 32; (C.), 98, 146
Appointments, lists of, 50, 104, 155, 205, 259, 310, 360, 412, 532, 588, 641, 693, 747, 799, 854, 906, 960, 1019, 1071, 1124, 1179, 1236, 1292, 1342, 1397
April 1st, 1930 (A.), 1106
Arcolax (N.P.), 158
Argyria, case of, 1043
Arkwright, J. A., Virulence of the micro-organism in infective disease (Bradshaw lecture), 963

728275

Armitage, George, and Gordon, John, in collaboration with others, Use of a new quinoline derivative in the treatment of infection, 968
Armour, Donald, Some of Lettsom's contemporaries, 855
Arrogance and ignorance in medicine (Sir E. Farquhar Buzzard), 695
Arrowroot: its medicinal and dietetic value (John Campbell), 311
Arsenic, the sale of (A.), 779; to minors (A.), 890
Arterial thrombi, multiple, 406
Arterio-venous fistulæ, congenital, 500
Artery forceps, improved (Hugh Donovan) (N.I.), 172
Artificial respiration, continuous, with maintenance of circulation for 12 hours after apparent death (J. Bagot Oldham), 497
Artificial silk works, health conditions in (P.I.), 1067
Asbestos dust, 230; workers and workmen's compensation (P.I.), 1068
Asherson, N., Note on hæmostasis in the mastoid operation, 1359
Aspiration during tonsillectomy (A.), 784; (C.), 951
Aspirin as a hirudicide (C.), 750
Assam's malaria problems and their solution (G. C. Ramsay), 1356
Association of Special Libraries and Information Bureaux, programme of, 589
Association of Surgeons of Great Britain and Ireland, offer of scholarship, 50
Asthma, and hay-fever (J. E. R. McDonagh), 271; bronchial, the mental factor in (M. K. el Kholy), 767; in children: value of sugar in prevention and treatment of (A. Arnold Osman), 1187; (C.), 1283; pathogenesis and treatment of, discussion on, 498; Research Council: new address, 694
"Asuero" treatment, the (C.), 638
Ataxias, familial, 1095
Athens, dengue in (A.), 135
Athletes, the after-history of (A.), 292
Atophan administered by inunction, 413
Auden, G. A., The age of marriage and of consent (C.), 689
Aural disease and bathing (A.), 182; (C.), 256, 306, 357, 534
Auricle of heart, enlargement of left (Francis Bach and T. S. Keith), 766
Auricular fibrillation in children (Harold Cookson), 1139
Auriscope, a new pocket electric, 208

AUSTRALASIA, CORRESPONDENCE FROM.—Australasian Medical Congress, 1007—Cancer research, what is being done in the Australias towards, 1007—College of Surgeons of Australasia, 352—Mackenzie, Dr. Colin, knighthood for, 576—New South Wales Hospital Bill, 577—Pan-Pacific Surgical Congress, 353—Queensland, hospitals in, 352—Radiation and living cells, 1007—Victoria, medical education in, 576

Autohæmotherapy in syphilis (A.), 240
Automaton, or The Future of the Mechanical Man (H. S. Hatfield) (R.), 962
Avertin anæsthesia, 826; discussion on, 978; (C.), 1063, 1220; for tetanus (A.), 295
Ayerza's disease (Geoffrey L. S. Konstam and Hubert M. Turnbull), 756; syndrome (A.), 833

B

Bach, Francis, and Keith, T. S., Enlargement of the left auricle of the heart, 766
Bacillus abortus infection in man, 280; *and see* Abortion, contagious, and *Brucella abortus*
Bacillus acidophilus in mental patients, 1093
Bacillus of hog cholera, two cases of human infection by (David Nabarro, P. Bruce White, S. C. Dyke, and W. M. Scott), 868
Back derangement, low, disabilities from, 87
Bacterial food poisoning, discussion on, 279
Bacteriology, Kolle and Wassermann's, 3rd ed., Lief. 18, Bd. V. (R.), 380; Handbook of (Joseph W. Bigger), 2nd ed. (R.), 718; and Immunology, Newer Knowledge of (E. O. Jordan and I. S. Falk ed.) (R.), 390; and Sanitary Science (Louis Gershenfeld) (R.), 718; in Relation to Medicine, A System of (various authors), Vol. III. (R.), 665
Bacteriophage and the cure of dysentery (L.A.), 289; antidysentery, in the treatment of bacillary dysentery (Arthur Compton), 273; (C.), 528; a polyvalent (A.), 621; (C.), 951
Bainbridge and Menzies' Essentials of Physiology, 6th ed. (H. Hartridge ed.) (R.), 826
Baker, J. R., Man and Animals in the New Hebrides (R.), 1148
Baker, S. L., Malignant tumours in the fowl (C.), 848
Bakolyse (N.P.), 158
Balfour, Margaret I., and Young, Ruth, Work of Medical Women in India (R.), 613
Ball, Laurence (O.), 1170
Balmain, A. R., and Burton, A. H. G., Foreign bodies and nasal carriers of diphtheria, 977; Scarlet fever: some aspects of bacteriology and serum treatment, 545
Bandages and dressings, adhesive, 858
Bankart, A. S. Blundell, Chordotomy in the treatment of osteoarthritis of the hip, 378; (C.), 527, 528; on scoliosis, 284
Barber, H. W., Relation of dermatology to other branches of medicine, 363, 483, 591
Barclay, A. E., on early diagnosis of cancer of stomach, 229; Interpretation of radiograms of the alimentary tract (A.D.), 1158, 1210, 1272, 1322, 1377; on X rays in detection and diagnosis of pulmonary tuberculosis, 90
Barker, J. R., on causes of early abortion and sterility, 875
Baron, Edward, The vaginoscope (N.I.), 1046
Barratt, Mary M., and Ledingham, J. C. G., on the visceral lesions that may accompany experimental vaccinia in rabbits, 515
Barris, J., on ætiology and symptoms of chronic cervicitis, 281
Bashford, H. H., The Harley Street Calendar (R.), 932
Bathing, aural disease and (A.), 182; (C.), 256, 306, 357; facilities, open-air (L.A.), 507
Baths, clean swimming (A.), 889; (C.), 953; pithead, at twopence a week, 1290
Batten, Lindsey W., and Simpson, R. H., Some points in the diagnosis of cardiac disease in children, 372
Bauwens, Ph., Electrical treatment in acute conditions, 1064
Bayly, H. Wansey, Interpretation of the Wassermann reaction (C.), 793
B C G vaccination of Pirquet-negative adults (A.), 887
Beach, Dr. Fletcher, death of, 399
Beaumont, G. E., and Dodds, E. C., Recent Advances in Medicine, 5th ed. (R.), 1098
Bedingfield, Harry, The significance of visceroptosis (C.), 1116
Bedson, S. P., Observations on vaccination, 920
Beef, the ripening of (A.), 724
Begg, A. M., and Cramer, W., on the alleged experimental production of malignant tumours in the fowl, 697; (C.), 899
Behaviour, Anatomy and the Problem of (G. E. Coghill) (R.), 127
Beit Memorial Fellowship for Scientific and Medical Research, meeting of trustees, 155
Belfrage, S. Henning, Brown *v.* white bread controversy (C.), 953
Belgrade, Children's Hospital at, 790
Belilios, Raphael (O.), 530
Bell, Dr. H. W., acquittal of (M.L.), 95
Bell sound, *see* Bruit d'airain
Bellot, H. Hale, University College, London, 1826–1896 (R.), 125
Benefactors of mankind (A.), 567
Bengal, malaria in (P.I.), 1233
Bennett, T. Izod, Clinical interpretation of charts of fractional test-meals (A.D.), 35, 82
Berkeley, Comyns, Gynæcology for Nurses, 5th ed. (R.), 560

BERLIN, CORRESPONDENCE FROM.—Accident insurance of medical staff, 576—Amalgamation of medical associations, 404—Birth injuries, 576—Boycott of a medical man, 845—Caffeine, influence of, on fertility, 575—Cholelithiasis, statistics of, 246—Country practice in Eastern Prussia, 404—Dentists, occupational diseases of, 845—Diphtheria, prophylaxis of, 576—Foodstuffs, cost of, 575—Germany, health of, 246—Gonococcal meningitis, 1166—Hip-joint, treatment of congenital dislocation of, 1165—Lead poisoning as a legacy of gunshot wounds, 844—Medical profession, critical condition of the, 1165; publications, abuse of, 576; qualification, abandonment of a, 1166—News items, 1166—Pharmacies, legal state of, 245—Silver leaf as a dressing for wounds, 1166—Stresemann's illness, 844—Strophanthin, murder by, 245—Tuberculosis, dietary treatment of, 404

Bernhard Baron Trust, annual distribution of grants, 1290
Bertwistle, A. P., Teaching of radiology (C.), 1171
Bevan-Lewis, William (O.), 890, 954
Bier, August, and others, Organhormone und Organtherapie (R.), 775
Bigger, Joseph W., Handbook of Bacteriology, 2nd ed. (R.), 718
Bile-pigment, examination of blood for (John H. Anderson) (A.D.), 346
Biliary passages, man's, fluke infections of (A.), 722
Billingham, M.O.H.'s report, 1004
Billington, William, Movable Kidney, 2nd ed. (R.), 1368
Biochemistry, Text-book of, for Students of Medicine and Science (A. T. Cameron) 2nd ed. (R.), 1045
Birch's Management and Medical Treatment of Children in India (V. B. Green-Armytage and E. H. V. Hodge), 7th ed. (R.), 178
Birkenhead, M.O.H.'s report, 1113; a new clinic at, 1160
Birmingham General Hospital, sesquicentenary celebration, 1286; Hospital Saturday Fund, 66; Hospitals' Contributory Scheme, 205; M.O.H.'s report, 520; poor-law hospital, a, 812
Birt, Joseph, Aspiration during tonsillectomy (C.), 951
Birth control, 414; information (P.I.), 1014; the technique of (A.), 623; injuries, 576; The Trauma of (Otto Rank) (R.), 930
Birth-rate in Vienna, decreasing, 1110
Births, marriages, and deaths, lists of, 51, 104, 156, 206, 259, 310, 360, 413, 477, 532, 588, 641, 694, 748, 800, 855, 906, 961, 1020, 1072, 1125, 1179, 1237, 1291, 1343, 1398
Bismuth in the treatment of congenital syphilis (T. M. Ling), 1034; preparations of, in the therapy of syphilis, discussion on, 982; value of, in the treatment of syphilis (H. Ritter and C. L. Karrenberg), 971; (A.), 1050
Black, J. Murray, Case of hyperthyroidism with mania, relieved by operation, 277
Black-board for the operating theatre, a white (C.), 1222
Blackburn, M.O.H.'s report, 714; S.M.O.'s report, 1389
Blackley, Charles Harrison, 929
Blackwater fever, bicarbonate for (C. P. Donnison) (C.), 47
Bladder, diseases of, incidence of among chemical workers, discussion on, 283; papilloma of, discussion on, 499
Blanchard, Charles Elton, A Text-book of Ambulant Proctology (R.), 1314
Bland, John, Vaccination or inoculation against small-pox (C.), 1062
Blastomycosis, generalised, a case of (A.), 238
Blind, crippled, and deaf children, education of (P.I.), 152; persons in England and Wales, number of (P.I.), 1068; local authorities and (P.I.), 1120; Royal Dundee Institution for the, annual meeting, 50; welfare of the (L.A.), 831
Blindness in India, relief of (L.A.), 1315; in old age, 665; preventable (L.A.), 75
Blomfield, Joseph, on avertin anæsthesia, 978
Blondel, Charles, The Troubled Conscience and the Insane Mind (R.), 72
Blood as a tissue, the, 819; counts, error in differential (A.), 1050; immunised, transfusion of (A.), 398; purpose of the (L.A.), 883; calcium, 1385; cells of the cat, selective action of X rays on (Samson Wright and H. A. Bulman), 217; (C.), 586; corpuscles, red, simplification of "halo" method of measuring diameter of (D. Merlin Price),

275; group, change of (A.), 889; groups in puerperal and neonatal disorders (A.), 991; medico-legal significance of (F. Schiff), 921; lipoids in psychotic patients (A.), 564; platelets, effect of X rays on (C.), 586, 639; in Werlhof's disease (A.), 726; pressure, high, recent aids in diagnosis of, 751; low arterial, 821
Bloxsome, H. E., and Davey, E. N., Case of *Brucella abortus* infection in man, 818
Bluejacket, morale of the (A.), 1374
Board of Control (L.A.), 1201
Board of Control for Scotland, General, 15th annual report (A.), 1106
Boas, F., Anthropology and Modern Life (R.), 178
Bodman, Frank, Anæmia in school-children (C.), 850: Irradiated milk v. cod-liver oil for rickets (C.), 1220
Bognor, new hospital at, 312
Bond, C. J., Mode of action of irradiated ergosterol on myelin forms of lecithin, 328
Bone-plates, use of, in treatment of fractures (H. H. Greenwood), 21
Bones and joints, "no dressing" treatment of infections of, 88
Boobbyer, retirement of Dr. Philip (A.), 725
Bootle, S.M.O.'s report, 406
Bott, Stanley (O.), 308
Bourne, Aleck W., Synopsis of Midwifery and Gynæcology, 4th ed. (R.), 389
Bourne, Geoffrey, Electrocardiograph leads (C.), 898
Boycott, A. E., on the blood as a tissue, 819
Boyd, William, Surgical Pathology, 2nd ed. (R.), 881
Boyle, H. E. G., on gas and oxygen in midwifery, 558
Brackett, Elliott, on disabilities from low back derangement, 87
Bradford, M.O.H.'s report, 1112
Bradshaw lecture, 784, 1075
Bragg, Sir William, Crystal structure of organic substance in its relation to medicine, 1293
Braid, James, 929
Brain, W. Russell, on epilepsy and on the use of thujone, 555; therapeutic uses of luminal, 867; Goeden, Minnie, and Fox, J. Tylor, Cholesterol of the blood plasma in epilepsy, 12
Branwell, J. Crighton, on disturbance of cardiac mechanism by syphilis, 331
Braun, Alfred, Sinus Thrombophlebitis (R.), 287
Bread, brown *v.* white, 53; (Gladys A. Hartwell and V. H. Mottram), 592; (C.), 1063; or toast for diabetics? (R. D. Lawrence), 1305
Breakfasts in hospitals, later (A.), 937; (C.), 1116
Breast, carcinoma of, further observations on histology of (D. H. Patey and R. W. Scarff), 492; (C.), 638; management of patients suffering from (F. Hernaman-Johnson), 1125
Brewing industry, research in the, 145
Bridge, J. C., on occupational dust, 230
Bridges, Robert, The Testament of Beauty (A.), 994
Brighton hospitals, rating of, 260; M.O.H.'s report, 517
Bristol, hospital coördination of, 305; hospitals, 1289
Bristow, W. Rowley, and Page, C. Max, Treatment of Fractures and Dislocation in General Practice, 3rd ed. (R.), 881
British College of Obstetricians and Gynæcologists (L.A.), 721; (C.), 743; first general meeting, 1236
British Empire Cancer Campaign (L.A.), 77
British Hospitals Association, 1072
British Institute of Radiology: annual meeting, 1157; election of officers, 150

BRITISH MEDICAL ASSOCIATION.—Abdominal pain, discussion on, 226—Albuminuria of pregnancy, preventive treatment of, 501—Anæsthetics, scientific administration of, 558—Annual general meeting, 225, annual meeting (A.), 138—Asthma, pathogenesis and treatment of, discussion on, 498—Avertin, 826—*Bacillus abortus* infection in man, 280, *and see Brucella abortus*—Bacterial food poisoning, discussion on, 279—Bismuth, preparations of, in therapy of syphilis, discussion on, 882—Blackley, Charles Harrison, 929—Bladder, industrial tumours of, 283, papilloma of, discussion on, 499—Blindness in old age, 665—Braid, James, 929—Cancer of stomach, early diagnosis of, discussion on, 227—Cerebro-spinal fluid in diagnosis and treatment of inflammatory intracranial lesions, discussion on, 611—Cervicitis, chronic (leukorrhœa), discussion on, 251—Cinematography of the living cell, 876—Dalton, John, 928—Dangerous Drugs Act, discussion on, 221—Demonstration at Grangethorpe Hospital, 713—Diverticulitis, discussion on, 383—Dyspepsia, chronic, in children of school age, discussion on, 384—Ear, chronic running, the reproach of the, 612—Epilepsies, discussion on the, 553—Ethylene and oxygen anæsthesia, 557—Exhibition of surgical instruments and appliances, drugs, foods, books, &c., 226, 502—Eye, minor injuries of the, in industry, 663—Focal sepsis and diseases of the eye, discussion on, 285—Frontal tumours, discussion on, 661—Gas and oxygen in midwifery, 558—Glucose: why, when, and how to use it, 558—Gynæcologist's training, the, 500—Health propaganda, value of, 879—Hospital policy of the Association, discussion on, 192—Intestine, tumours of, discussion on, 710—Lagrange's operation for glaucoma, 663—Larynx, tuberculosis of, discussion on, 713—Maternal mortality, discussion on, 660—Nasal catarrh in children, 772—Obstetrics, modern, surgical tendencies of, 500—Occupational dust, discussion on, 230—Physiology, human, place of, in training of medical students, discussion on, 478—Placenta prævia, symptoms and diagnosis of, 287—Pleuritic effusions, treatment of, discussion on, 278—Poor-law, reform of the, 222—Presidential address, 153—Private practitioner in relation to public health service, 222—Proceedings of Representative Body, 192, 221; (A.), 236—Pulmonary tuberculosis, conditions simulating, 772; sanocrysin treatment in, 771—Rectal ether oil anæsthesia: with special reference to brain surgery, 556—Religion, stimulus to surgery given by, during neolithic period, 929—Religious service at, 225—Renal function, physiological tests of, discussion on, 822—Reticulo-endothelial system, 711—Rhinorrhœa, spasmodic, drug treatment of, 612—Scoliosis, discussion on, 284—Silicosis in Britain, discussion on, 282—Skin, commoner microbic diseases of, X ray treatment of, discussion on, 609—Social and other functions at, 225—Spinal anæsthesia with spinocain, 825—Surgeons who were never surgeons, 926—Syphilis, lesions of latent, 556; of heart and aorta, discussion on, 730—Tonsils and adenoids, discussion on, 335—Tuberculosis, apical and subapical, discussion on, 770—Tuberculosis in early childhood, discussion on, 608—Tuberculosis of bovine origin, human, discussion on, 824—Tuberculosis of larger joints, operative treatment in, discussion on, 711—Venereal disease, diagnostic and other errors in questions of, 981—Vitreous opacities, significance of, 665—Voluntary boarder in mental hospitals, position of, discussion on, 232—X ray treatment of commoner microbic diseases of skin, 609; wounds, 610

British Pharmaceutical Society, Congress, 49
British Science Guild, aims and work of the (L.A.), 1160; lectures, 798
British Social Hygiene Council: appeal for lecturers, 802; chairmanship of committee, 359; summer school, 204
Brock, Arthur J., Greek Medicine (R.), 1046
Brock, J. H. E., Case of meningo-encephalitis following German measles, 1190
Brockbank, E. M., on John Dalton, 928
Bronchiectasis in childhood (A.), 245
Bronchus, adenocarcinoma of, case of (L. S. T. Burrell), 798
Browdy, M. W., Interpretation of fertility tests (C.), 1063
Brown, William, Science and Personality (R.), 389
Brown *v.* white bread controversy (Gladys A. Hartwell and V. H. Mottram), 592; (C.), 953, 1012
Bruce, John Mitchell (O.), 97; (C.), 357
Bruce-Porter, Sir Bruce, Brown *v.* white bread controversy (C.), 953
Brucella abortus infection in man, case of (H. E. Bloxsome and E. N. Davey), 818; isolation of, from a case of undulant fever (H. J. Nightingale and G. S. Wilson), 1143; *and see* Abortion, contagious, and *Bacillus abortus*
Brugia, R., Revision de la doctrine des localisations cérébrales (R.), 503
Bruit d'airain, observations on the (A. L. Granville McLaughlin and A. J. Dixe-Perkin), 1351
Brunner, Theodore, Intrathecal treatment of parasyphilitic affections of the nervous system, 117

BUCHAREST, CORRESPONDENCE FROM.—Katzenstein method of testing the heart, 405—Sexes, relative intelligence of the, 405—Thrombi, multiple arterial, 406

Buckley, Thomas William (O.), 530

BUDAPEST, CORRESPONDENCE FROM.—Aortic disease, hard work and, 1218—Congress of German medical historians, 1058—Defectives, physical, ascertainment of, 1059—Lay press, articles by doctors in the, 1059—Nitric acid fumes, poisoning with, 1218—Practitioners in Hungary, number of, 1059

Buist, Massac, on the doctor and the motorist, 1094
Bull, J. C., on early diagnosis of cancer of stomach, 229
Bulman, H. A., and Wright, Samson, Selective action of X rays on the blood-cells of the cat, 217
Bureaucracy: enough and not too much (A.), 781
Burgess, Arthur Henry, on the debt of modern surgery to the ancillary sciences, 159
Burn, J. H., on proper use of ergot, 1040
Burnet, James, Clinics for rheumatic children (C.), 1219
Burns, tannic acid treatment for, 955
Burrell, L. S. T., Case of adenocarcinoma of bronchus, 798; Recent Advances in Tuberculosis (R.), 359; on treatment of pleuritic effusions, 278; Hare, Dorothy C., and Rose, Joan M., Case of tuberculous polyserositis with predominant pericardial involvement, 1303; and Melville, Stanley, Radiographic examination of the lungs (C.), 669
Burrows, Harold, Induction of inflammation in treatment of malignant and other local diseases, 603
Burton, A. H. G., and Balmain, A. R., Foreign bodies and nasal carriers of diphtheria, 977; Scarlet fever: some aspects of bacteriology and serum treatment, 545
Buzzard, Sir Farquhar, on abdominal pain, 226; on arrogance and ignorance in medicine, 695

C

Caesarean section, use of glycerin in (Margaret Salmond), 659
Caffeine, influence of, on fertility, 575
Caiger, Frederick Foord (O.), 583
Cairns, Hugh, on conditions resembling pituitary tumour, 877; on ocular manifestations found in head injuries, 68; on surgery of the spinal cord, 1057
Caisson disease in the Lötschberg tunnel (A.), 835
Calder, A. M., and Goodall, Alexander, Importance of transfusion in treatment of pernicious anæmia, 1144
Cambridge, S.M.O.'s report, 522
Cambridge, county of, S.M.O.'s report, 1060
Cameron, A. T., Text-book of Biochemistry for Students of Medicine and Science, 2nd ed. (R.), 1045
Cameron, H. C., on the difficult child, 1241; The Nervous Child, 4th ed. (R.), 986; Vulvitis, acute, of little girls: is it gonorrhœal? (C.), 1115
Cammidge, P. J., on retinitis in diabetics 1038
Campbell, Harry, Loss of appetite in childhood (C.), 146
Campbell, John, Arrowroot: its medicinal and dietetic value, 311

Campbell, Sir John (O.), 512, 584
Campbell, J. Menzies, Those Teeth of Yours (R.), 1264
Campbell, S. Boyd, on serum reactions in cardio-aortic syphilis, 331
Campbell oration on progress in urology (Andrew Fullerton), 1345
Cancer, Le (Gustave Roussy and others), 2nd ed. (R.), 1096; A Practical Résumé for General Practitioners (G. Jeanneney) (R.), 73; among industrial workers (P.I.), 1066; among Jews, 51; Campaign, British Empire: 6th annual report (L.A.), 77; Conquest of, by Radium and Other Methods (Daniel Thomas Quigley) (R.), 616; deaths from (P.I.), 1340; hospital for Manchester, new, 92; inquiry, the scope of (C.), 197; occupational in cotton-workers, 208; radiological treatment of: recommendations on standards and technique, 348; research in the Australias, 1007; statistics, the correlation of (L.A.), 235; susceptibility to (L.A.), 1149; tar, in mice, influence of ultra-violet rays on incidence of (Alice C. Kohn-Speyer), 1305
Cancer of breast, further observations on histology of (D. H. Patey and R. W. Scarff), 492; (C.), 638; management of patients suffering from (F. Hernaman-Johnson), 1125
Cancer of larynx, diagnosis of (C.), 898, 1011
Cancer of stomach (L.A.), 1100; early diagnosis of, discussion on, 227; precursors of (Arthur F. Hurst) (Schorstein lecture), 1023
Cancers, nerves in (A.), 394
Canti, R. G., on cinematography of the living cell, 878
Capillaries, Anatomy and Physiology of (August Krogh), 2nd ed. (R.), 931; contractility of, James Black's description of (1925) (C.), 1010, 1221
Cappell, D. F., on the reticulo-endothelial system as studied by intra-vitam staining, 711
Carbohydrate metabolism, rôle of insulin and other hormones in control of (J. J. R. Macleod), 55
Carbon monoxide in low concentration, effect of, 405; poisoning (A.), 1207; first aid in (A.), 1317
Carcinogenesis, chromosome imbalance theory of (J. A. Murray), 297
Carcinoma, *see* Cancer
Cardiac disease, congenital, clinical classification of (Maude E. Abbott), 164; in children, some points in the diagnosis of (R. H. Simpson and Lindsey W. Batten), 372; massage, efficiency of (A.), 568; stimulants (L.A.), 1049
Cardiff, M.O.H.'s report, 1113; Mental hospital assessment, 1218
Cardio-aortic syphilis (L.A.), 393
Cardiovascular disease, action of baths in, 947; System, The Pressure Pulses in the (Carl Wiggers) (R.), 231
Carleton, H. M., and Schafer, Sir Edward Sharpey, Essentials of Histology, 12th ed. (R.), 1370
Carlill, Hildred, chordotomy in the treatment of osteoarthritis of the hip (C.), 528
Carlisle, M.O.H.'s report, 1003
Carlton, C. Hope, Factors in foot reconstruction, 605
Carnivore, man as a (A.), 238
Carotin, relation of, to vitamin A (Thomas Moore), 380; significance of (L.A.), 392
Carpi, Umberto, La Collassoterapia nella Tubercolosi Polmonare e nelle Lesioni Distruttive del Polmone (R.), 880
Carson, Herbert, on whitlow and its complications, 1309
Cartilage, displaced mandibular, causation and treatment of (Cecil P. G. Wakeley), 543; (C.), 689
Case of Miss R., The (Alfred Adler) (R.), 828
Castellani, Sir Aldo, Metadysentery, with remarks on a chronic type, 370
Cataract and glaucoma, treatment of, in Madras (A.), 1376; and some other ocular affections, treatment of (Henry Smith and others) (R.), 668
Catgut, preparation of (A.), 993; surgical, 946
Causton F. G., *Schistosoma bovis* in South Africa (C.), 690
Cautionary notice, a, 694
Cement works, noxious fumes from (P.I.), 1068
Central Association for Mental Welfare, report of proceedings, 399
Central Midwives Board, the, on itself (A.), 1152
Cerebellar artery, thrombosis of superior (C. Worster-Drought and I. M. Allen), 1137
Cerebral localisation (C.), 585
Cerebro-spinal fluid as aid to diagnosis and treatment of inflammatory intracranial lesions, discussion on, 611; in health and disease (Abraham Levinson), 3rd ed. (R.), 1147; optical properties of the (A.), 1102
Certification, a point in (C.), 899; of fitness for work, (C.), 850
Cervicitis, chronic (leukorrhœa), discussion on, 281
Cervix uteri, case of spasm of (L. J. Green), 22
Ceylon, medical progress in, 1238
Chadwick lecture, 961; trust scholarships, 258
Chalmers, R., Abdominal tenderness and unnecessary operations, 794
Champneys, W. D., on *Bacillus abortus* infection in man, 280
Chandler, F. G., Puncture of the chest: its occasions and technique, 1084; on treatment of pleural effusion in artificial pneumothorax, 1145
Character, The Science of (Ludwig Klages) (R.), 615
Charles, J. A., and Warren, S. H., Bacillary dysentery in an industrial area, 626
Chartered Society of Massage and Medical Gymnastics, 568
Chavasse, Bernard, on comitant convergent squint, 1311
Cheatle, Sir G. Lenthal, the grading of breast carcinomata (C.), 638
Cheese, half-meat, food value (P.I.), 103
Chelmsford, M.O.H.'s report, 145
Chemical Pathology, Clinical, Handbook of (Frank Scott Fowweather) (R.), 72
Cherry, Thomas H., Gynæcological Technic (R.), 1045
Cheshire County Mental Hospital, centenary of, 122
Cheshire, M.O.H.'s report, 1387
Chest, puncture of the: its occasions and technique (F. G. Chandler), 1084
Chester, M.O.H.'s report, 1003
Child care, books on, 52; the difficult, and the team method (A.), 1319, discussion on, 1261; the potentially tuberculous, 38; the pre-school, 534; problem of the (A.), 1267; welfare film, 858
Childbirth among primitive peoples (C.), 638; another anæsthetic for (A.), 835
Childless marriage, the (L.A.), 130
Children and bovine tuberculosis (P.I.), 203; and Young Persons (Employment and Protection) Bill (P.I.), 1225; defective, education of (P.I.), 153; in India, Birch's Management and Medical Treatment of (V. B. Green-Armytage and E. H. Vere Hodge), 7th ed. (R.), 178; in Ireland, protection of, 1111; mentally defective (P.I.), 153; physically defective, operative treatment of (P.I.), 153; treatment camp for (A.), 344
Children's Welfare Clinic, 1290
China station, venereal disease on the (A.), 675
Chinese medicine, four millenniums of (K. C. Wong), 156, 206, 260
Chloretone, the uses of (W. Essex Wynter), 1245
Chlorinated water, taste of (A.), 509
Chlorotic anæmia in the middle-aged (A.), 937
Chocolates and cocoa, Cadbury's, 1292
Cholécystectomie, Les Accidents de la (Serge Huard) (R.), 614
Cholecystectomy, drainage after (A.), 1207
Cholecystography (John H. Anderson) (A.D.), 400
Cholelithiasis, diagnostic value of estimation of blood cholestered in (R. H. O. B. Robinson), 540; statistics of, 246
Cholera in Bengal, 42
Cholesterol, blood, diagnostic value of estimation of, in cholelithiasis (R. H. O. B. Robinson), 540; of the blood plasma in epilepsy (Minnie Gosden, J. Tylor Fox, and W. Russell Brain), 12
Chopra, Bodh Raj, the expectant mother and her baby (R.), 667
Chordotomy in the treatment of osteoarthritis of the hip (A. S. Blundell Bankart), 378; (C.), 527, 528
Chorea, treatment of, by nirvanol (F. John Poynton and Bernard Schlesinger), 267
Cinchona bark, the cultivation of (A.), 834
Cinema, ventilation of a, 642
Cinematographic demonstrations of prostatectomy, litholapaxy and urethrotomy, 24
City Dispensary, the, annual report of, 1380
Civil Service and scientific research (P.I.), 1066; staffs, accommodation of (P.I.), 202
Clamp, a bone-retaining (Alan H. Todd) (N.I.), 67
Clark, A. J., Applied Pharmacology, 3rd ed. (R.), 1147
Clark, G. Norman, Orbital abscess following removal of tonsils and adenoids, 978
Clark, R. M., Malaria treatment of general paralysis (C.), 1171
Clarke, B. R., Sanocrysin treatment in pulmonary tuberculosis, 771
Clemenceau, 1166; medical life of, 1218
Clendening, Logan, Modern Methods of Treatment, 2nd ed. (R.), 1264
Climacteric: the Critical Age (Gregorio Maranon) (R.), 502
Clinical Laboratory Methods (Russell Landram Haden), 3rd ed. (R.), 1046
Cocaine and cocaine hydrochloride, manufacture of (P.I.), 1176
Cochrane, Robert G., Action of ephedrine in relieving certain painful accompaniments of leprosy and lepra reaction, 551
Cockayne, E. A., on life's endless chain, 734
Cockburn, Sir John Alexander (O.), 1223
Coghill, G. E., Anatomy and the Problem of Behaviour (R.), 127
Cohen, J. B., on use of a new quinoline derivative in the treatment of infection, 968
Coin sound, *see* Bruit d'airain
Colchester, M.O.H.'s report, 1330
Coles, D. A., tannic acid for burns (C.), 1011
Collapse therapy: La Collassoterapia nella Tubercolosi Polmonare e nelle Lesioni Distruttive del Polmone (Umberto Carpi) (R.), 880
College of Physicians of Philadelphia: Alvarenga prize, 1070
Collier, James, on the diagnosis of frontal tumours, 661
Colonial Development Bill (P.I.), 199; health services (P.I.), 1337, 1338
Colonies, visits of medical experts to (P.I.), 1174
Colour vision, subjective phenomena and (C.), 529
Comerford, Beaumont H., Aural disease and bathing (C.), 256
Compton, Arthur, Antidysentery bacteriophage in the treatment of bacillary dysentery, 273; (C.), 528

CONFERENCES AND CONGRESSES.—American College of Surgeons, Clinical Congress at Chicago (A.), 81: (L.A.), 829—Australasian Medical Congress, 1007—Dermatology and Syphilology, International Congress of, at Copenhagen, 49—German Medical History Society in Budapest, 1059—Hydrology and Rheumatism, at Budapest, 947—Malaria Congress, Second International, 1169—Maternity and Child Welfare, in London (A.), 34, 69—Mental Health at Westminster, 798, 890, 998—Merchant Seamen, International Conference on Health and Welfare of, at Geneva, 359—Military Medicine and Pharmacy at Warsaw, 54—Ophthalmological Congress, International, at Amsterdam (A.), 82, 399, 507—Ophthalmological Congress at Oxford, 67—Ophthalmology, International Congress of, at Amsterdam (A.), 82, 399, 507; proceedings of, 631—Opium and Dangerous Drugs, International Control of, 958—Optical Congress at London, 589—Orthopædic Associations of America and Great Britain (L.A.), 75; proceedings at joint meeting, 86—Panel Conference, 942—Pan-Pacific Surgical Congress, 353, 1362—Pharmaceutical Society, British, 49—Physiological Congress, International, at Boston, 405, proceedings, 729—Radiological, in London, 1274, 1398—Royal Sanitary Association of Scotland, at Kirkcaldy, 642—Royal Sanitary Institute at Sheffield, 148, 172—Sexual Reform (A.), 568—Social Hygiene Congress, Imperial, in London, 34; (A.), 78; proceedings of, 140—Tuberculosis, International Association for Prevention of, at Newcastle-upon-Tyne, 358; proceedings of, 842—Water-supply and Pollution, 853

Confession without corpse (M.L.), 792
Congenital cardiac disease, clinical classification of (Maude E. Abbott), 164; ectodermal defect (A. W. Falconer), 656; (C.), 743; fistulæ, a simple method of dealing with (R. J. McNeill Love), 122
Conscience, The Troubled, and the Insane Mind (Charles Blondel) (R.), 72
Consumptive wife, deserting a (A.), 888
Contagious abortion and Malta fever (P.I.), 307; (C.), 953
Contraception, an American investigation of, 1128
Contracture of the little fingers, hereditary, case of (Alan H. Todd), 1088
Control, Board of (L.A.), 1201
Cooke, W. E., on asbestos dust, 230
Cookson, Harold, Auricular fibrillation in children, 1139
Coombs, Carey F., Clinics for rheumatic children (C.), 1283
Cooper, T. V., Case of congenital atresic abnormality of œsophagus, 607
Cope, V. Zachary, on abdominal pain, 227; Some Principles of Minor Surgery (R.), 287; on whitlow and its complications, 1309
Core, Donald, on three classes of epileptics, 555
Cornea, hypopyon ulcer of the (A. Christie Reid), 64
Corner, Edred M., What becomes of medical students? (C.), 951
Coroner and medical profession, relationship of (C. W. W. Surridge), 838
Coroner's authority, the (L.A.), 671, discretion, the (L.A.), 291, inquest and police proceedings (M.L.), 946, inquests, procedure at (P.I.), 957
Corpora trivialia (L.A.), 130
Cosens, W. B., The craft of surgery (C.), 1220, Shewry *v.* Maybury (C.), 147
Cosmetic surgery (L.A.), 28
Cotton-workers, occupational cancer in, 208
Courteous act, a, 590
Couvade, the Custom of (Warren R. Dawson) (R.), 54
Coventry, M.O.H.'s report, 846
Cowan, John, and Faulds, J. Steven, on syphilis of heart and aorta, 330
Coward, Katharine H., Value of irradiated milk compared with cod-liver oil as a source of vitamin D, 1090; (C.), 1331
Cowdry, Edmund V. (ed.), Special Cytology (R.), 286
Cox, Edwin Marion, Mental Handicaps in Literature (R.), 53
Cox, G. Lissant, on conditions simulating pulmonary tuberculosis, 772
Coyle, Cecil D., and Hurst, E. Weston, Acute disseminated encephalomyelitis following vaccination, 1246
Craigie, J., and Tulloch, W. J., Vaccination or inoculation against small-pox (C.), 1062
Cramer, W., Liver treatment in essential thrombopenia (C.), 1332; and Begg, A. M., on the alleged experimental production of malignant tumours in the fowl, 697, (C.), 899; and Mottram, J. C., Brown *v.* white bread controversy (C.), 1012; effect of X rays on blood platelets (C.), 586
Crawford A. Muir, Contribution to the study of renal glycosuria, 214
Crawford, Mrs. Dobbin, on a useful perineal dressing, 980
Cream, artificial: a prosecution, 413, 961
Cremation and public safety (L.A.), 562; in Manchester, 1123
Cridland, A. B., on minor injuries of the eye in industry, 664
Crimes, a Book of (A. Salusbury MacNalty) (R.), 882
Criminal lunatics at large (M.L.), 1055
Crippled, blind and deaf children, education of (P.I.), 152; children, home for, 640
Critchley, M., on diagnosis of frontal tumours, 662; on epithelial tumours in the pituitary region, 877
Croft, Edward Octavius (O.), 358
Crofton, W. M., Cures and prevention (C.), 793, 1012; An Outline of Endocrinology, 2nd ed. (R.), 232
Crookshank, F. G., The Anglo-French Library of Medical and Biological Science (C.), 410; mutilating operations (C.), 1391
Crouzon, O., Le Syndrome Epilepsie (R.), 287
Crow, Douglas A., radium-needle introducer (N.I.), 1366
Croydon inquests, the (M.L.), 94; M.O.H.'s report, 846
Cruchet, Réné, L'Encéphalite Epidémique: Les Origines (R.), 287
Cruchet's "encéphalomyélite subaiguë diffuse" and epidemic encephalitis lethargica (Constantin von Economo), 121
Cruickshank, J., on bacterial food poisoning, 279
Crystal structure of organic substance in its relation to medicine (Sir William Bragg) (Huxley lecture), 1293
Cullen, G. Matheson, Vesalius and the inquisition myth (C.), 362
Cullen, T. S., the gynæcologist's training, 500
Cumberland, M.O.H.'s report, 1388
Cunningham, L., and Datnow, M. M., the importance of the liver in chemotherapy, 652
Cures and prevention (L.A.), 720; (C), 793, 899, 1012
Curgenven, John Sadler (O.), 1334
Curschmann, Hans, Endocrine disorders (R.), 985
Cystostomy and cæcostomy, self-retaining tubes for the operations of (F. Wilson Harlow), 119
Cytology, Special (Edmund V. Cowdry, ed.) (R.), 286

D

Da Costa, A. F. Winnington, Vaccination and encephalitis (C.), 743
Dacryocystotomy, intranasal, 67
Dairy Bacteriology (Bernard W. Hammer) (R.), 882; farms, inspection of (P.I.), 1288
Dally, J. F. Halls, on low arterial blood pressure, 821
Dalton, John, 928
Dampness in houses (A.), 136
Dance of Death, The Modern (Peyton Rouse) (R.), 232
Dangerous Drugs, manufacture of (P.I.), 1014; purchase of (C.), 1221; thefts of (P.I.), 152; traffic in (A.), 133; *and see* Narcotic drugs
Dangerous Drugs Acts, B.M.A. discussion on, 221; doctors fined under (M.L.), 841; falsification of prescriptions (M.L.), 351; keeping register (M.L.), 351, 802; prosecution under, 1290
Darier, J., Précis de Dermatologie, 4th ed. (R.), 931
Datnow, M. M., and Cunningham, L., The importance of the liver in chemotherapy, 652
Davey, E. N., and Blosome, H. E., Case of *Brucella abortus* infection in man, 818
David Lewis Epileptic Colony, annual meeting, 1290
Davidson, Maurice, Intrathoracic and pulmonary new growths, 1181
Davies, Arthur Mercer (O.), 1224
Davies, Arthur Templer (O.), 1223
Dawson, Lord, on the future of medical practice, 85; re-elected President Royal Society of Medicine, 82
Dawson, Warren R., The Custom of Couvade (R.), 54; Magician and Leech (R.), 1344
Deaf, blinded and crippled children, education of (P.I.), 152; National Institute for the, annual meeting of, 141; annual report of, 671; neglect of the (A.), 671; welfare of the (A.), 34
Death, sudden, causes of, 902
De Caux, F. P., on glucose: why, when, and how to use it, 558
Decorations and distinctions, 796, 1070
De Courcy, T. L., on significance of vitreous opacities, 665
De Crespigny, C. T. Champion, and Woollard, H. H., a case of Schilder's disease, 864
Deformities, principles in the treatment of common (Naughton Dunn), 871
Dengue in Athens (A.), 135
Denison, Abby-Helen, A Text-book of Eye, Ear, Nose, and Throat Nursing (R.), 1044
Dental Anatomy: Classroom and Laboratory Quiz Compend (W. C. Stillson) (R.), 74; Graphic Presentation of Tooth Forms with an Original Technique for their Reproduction (M. Diamond) (R.), 1370; Board of United Kingdom: election of direct representatives, 44; Histology (A. Livingston) (R.), 26; Infection and Systemic Disease (Russell L. Haden) (R.), 1148; practice, ethics of (A.), 1105; Surgeon's liability for water-supply (A.), 78
Dentist, school, salary of a (P.I.), 103
Dentistry and medicine, legal aspects of (A.), 184; conservative, dangers of (A.), 1052
Dentists and the hairdresser (A.), 1155; occupational diseases of, 845
Derby, M.O.H.'s report, 847
Derbyshire, M.O.H.'s report, 1278
Dermatologie, Précis de (J. Darier), 4th ed. (R.), 931
Dermatology and general medicine (L.A.), 391; fifty years of (Sir Norman Walker), 209; microscopic findings in (Henry G. Semon) (A.D.), 940; relation of, to other branches of medicine (H. W. Barber), 363, 483, 591; and Venereal Diseases, Aids to (R. M. B. MacKenna) (R.), 1045
Dermatoses, itching, treatment of, 312
Dewar, Thomas Finlayson (O.), 1285
De Wild, A. Martin, Scientific Examination of Pictures (R.), 931
Diabetes, 790; increased gluconeogenesis in, 57; significance of the R.Q. in, 55
Diabetic coma (A.), 397; diet, regulation of the (A.), 783; research, studentship in, 707
Diabetics, bread or toast for? (R. D. Lawrence), 1305; retinitis in, 1038

DIAGNOSIS, CLINICAL INTERPRETATION OF AIDS TO.—Acid base balance in the blood, significance of (John R. Marrack), 512, 569—Bile-pigment, examination of blood for (John H. Anderson), 346—Cholecystography (John H. Anderson), 400—Dermatology, microscopic findings in (Henry G. Semon), 940—Dick and Schultz-Charlton tests (R. A. O'Brien), 296—Fæces, microscopical examination of (S. W. Patterson), 727, 785—Fractional test-meals, charts of (T. Izod Bennett), 35, 82—Food poisoning acute, diagnosis of (W. G. Savage) 1054, 1107—Gonorrhœal infections in the male (A. B. Rosher), 836—Radiograms of alimentary tract, interpretation of (A. E. Barclay), 1158, 1210, 1272, 1322, 1377—Schick test, interpretation of (R. A. O'Brien), 241—Sterility and fertility in the male, interpretation of tests of (Kenneth Walker), 995—Urethral and vaginal discharges (Frederick Roques), 890—Wassermann reaction in adults, interpretation of (T. E. Osmond), 624, 677

Diagnosis of some common disorders, recent aids in (T. C. Hunt), 751; Physical (Charles Phillips Emerson), 2nd ed. (R.), 26
Diagnostic Methods and Interpretations in Internal Medicine (Samuel A. Loewenberg) (R.), 776
Diamond, M., Graphic Presentation of Tooth Forms (R.), 1370
Diaphragm in health and disease (A.), 79
Diaries for 1930, 1398
Dibblee, George Binney, Instinct and Intuition (R.), 1313
Dick and Schultz-Charlton tests, interpretation of (R. A. O'Brien) (A.D.) 296
Diet, domestic, an attempt to improve (A.), 833; meat, effect of (A.), 238
Dietetics, hospital training in (A.), 137; Laboratory Handbook for (Mary Swartz Rose), 3rd ed. (R.), 1369
Digipan (N.P.), 158
Digits, supernumerary, an inherited tendency to (C.), 256, 639
Dilatation of auricles resulting from heart-block (Albert A. Fitzgerald Peel), 1248

DINNERS.—British and American Orthopædic Associations, 89—British Institute of Radiology, 1276—British Medical Association Council, 851—Buckston Browne dinner of Fellows and Members of Royal College of Surgeons, 1163—Charing Cross Hospital past and present students, 797—Chelsea Clinical Society, 958—College of Pestology, 1018—London Hospital, 904—Medico-Legal Society, 1342—Middlesex Hospital, 746—Old Epsomian Club, 1333—Queen Alexandra's Hospital for Officers, 1018—Royal Dental Hospital (A.), 1156—Royal Free Hospital School of Medicine for Women, 1289—Royal Society of Medicine, 1164—St. Bartholomew's Hospital Old Students, 745—St. George's Hospital, 797—St. Mary's Hospital, 797—St. Thomas's Hospital, 797—Society of Apothecaries livery dinner,

958—Society of Medical Officers of Health, 1122—Surgical Instrument, Manufacturers' Association, 853—West London Medico-Chirurgical Society, 100—Westminster Hospital past and present students, 746

Diphtheria, foreign bodies and nasal carriers of (A. H. G. Burton and A. R. Balmain), 977 ; prevention of, in New York (A.), 509; prophylactic (L.A.), 29; prophylaxis of, 576
Diphyllobothrium latum in N. America (A.), 780
Disclaimer, A (C.), 952, 1238
Disinfectant packets (C.) 530, 586
Distribution of sickness, the (A.), 1208
Diverticulitis, discussion on, 383 ; fatal case of, 1362
Divorce, the preventive medicine of, 1073
Dixon, W. E., Physiology : the basis of treatment, 187
Dix-Perkin, A. J., and McLaughlin, A. I. Granville, Observations on the bruit d'airain, 1351 ; Pneumothorax induction trocar and cannula (N.I.), 552
Dobson, J. F., on use of a new quinoline derivative in the treatment of infection, 968
Doctor and patient : 33 years of mistakes, 732
Dodds, E. C., on fractional test-meal in diagnosis of gastric diseases, 1042 ; on physiological tests of renal function, 823 : on some methods of investigating pituitary disease, 877 ; and Beaumont, G. E., Recent Advances in Medicine, 5th ed. (R.), 1098
Dogs, hysteria in (P.I.), 1067
Domarus, A. von, Einführung in die Hämatologie (R.), 1046
Donations and bequests, 100, 138, 204, 258, 359, 531, 570, 684, 745, 818, 1016, 1114, 1176, 1235, 1342
Donnison, C. P., Bicarbonate for blackwater fever (C.), 47
Donovan, Hugh, Improved artery forceps (N.I.), 172
Dougal, D., on maternal mortality, 660
Douglas, C. G., on place of human physiology in training of medical students, 478
Douthwaite, A. H., Treatment of Rheumatoid Arthritis (R.), 827
Dover. S.M.O.'s report, 1060
Dowling, G. B., A simple method of treating cavernous nævi, 1251
Drop-foot, an operation to check, 88
Drought in the Thames valley, the (L.A.), 180
Drug addicts, treatment of, in New York City, 1384 ; traffic, the (A.), 1208
Drugging the truth out of suspects (M.L.), 575
Dublin, electrotherapeutic clinic in, 1280 ; hospital, enlargement of a, 1238 : University Biological Association, opening meeting, 953
Dudley Maternity Home, opening of, 693
Duke-Elder, W. Stewart, Recent Advances in Ophthalmology, 2nd ed. (R.), 25
Dukes, Cuthbert, on tumours of the intestine, 710
Dumfries, M.O.H.'s report, 1389
Dundas-Grant, Sir James, Diagnosis of laryngeal cancer (C.), 898, 1063
Dunn, C. L., and Pandya, D. D., Chemistry and Bacteriology of Public Health (R.), 1369
Dunn, J. Shaw, on physiological tests of renal function, 823
Dunn, Naughton, Principles in the treatment of common deformities, 871
Dunne, death of Dr. Frank, 1058
Duodenal ulcer, note on pain in relation to (Donald Macleod), 1358
Duodenum, interpretation of radiograms of the (A. E. Barclay) (A.D.), 1272
Durham, M.O.H.'s report, 1386
Dust, occupational, discussion on, 230
Dyke, S. C., Scott, W. M., Nabarro, David, and White, P. Bruce, Two cases of human infection by the American hog-cholera bacillus, 868
Dysentery, bacillary, antidysentery bacteriophage in the treatment of (Arthur Compton), 273, (C.), 528 ; in an industrial area (J. A. Charles and S. H. Warren), 626 ; bacteriophage and the cure of (L.A.), 289 ; in Great Britain (L.A.), 670
Dyspepsia, chronic, in children of school age, discussion on, 384
Dyspepsias, classification of the, 1041 ; of childhood, 903

E

Eagleton, Wells P., on cerebro-spinal fluid as aid to diagnosis and treatment of inflammatory intracranial lesions, 611
Ealing, M.O.H.'s report, 1002
Ear, chronic running, the reproach of the, 612 ; early operation for acute suppuration of middle (A.), 79 ; plugs for bathing, 534 ; school-boy's in clinical practice, 768
Earp, J. Rosslyn, Disinfectant packets (C.), 530
Eastbourne, M.O.H.'s report, 578
Eccles, M.O.H.'s report, 1004
Eccles, W. McAdam, on some gaps in the scientific study of inebriety, 124
Eclampsia and albuminuria of pregnancy, ultimate prognosis in cases of (Jessie C. B. Sym), 698
Ectodermal defect, congenital (A. W. Falconer), 656 ; (C.), 743
Eczema, infantile, note on treatment of (A. A. Osman), 1187 ; treatment of, 534
Eden, T. Watts, on training of midwives, 1091
Edinburgh, M.O.H.'s report, 300 ; motor accidents at, 853 ; Royal Infirmary, bicentenary of, 299, 346
Edmonton, M.O.H.'s report, 96
Edridge-Green, F. W., Subjective phenomena and colour vision (C.), 529
Education (Scotland) Bill (P.I.), 1173
Educational Associations, World Federation of, 361
Edwards, G., on avertin, 826
Egyptian medicine, ancient, 1344
Eidinow, Albert, Actinotherapy : some clinical results of treatment, 649
Elastoplast bandages and dressings, 858
Elbow-joint, minor injuries about the, discussion on, 1256
Electric shock, experimental (A.), 395
Electric treatments in acute conditions (C. B. Heald), 974; (C.), 1064, 1222
Electrical security, 1074
Electrocardiograms, Clinical (Frederick A. Willius) (R.), 776
Electrocardiograph leads (C.), 898
Electrotherapy, Principles of, and their Practical Application (W. J. Turrell), 2nd ed. (R.), 25
Ellingworth, S., on use of a new quinoline derivative in the treatment of infection, 968
Elsdon, G. D., and Evers, Norman, The Analysis of Drugs and Chemicals (R.), 882
Embolectomy (A.), 674 ; pulmonary, 1274
Emerson, Charles Phillips, Physical Diagnosis, 2nd ed. (R.), 26
Emphysema, case of, treated by mechanotherapy (A. Kellgren-Cyriax), 1360
Employees, the practitioner's : their position under national insurance, 839
Empyema, case of, with perforation of bronchus and partial pneumothorax (George Jessel), 1090 ; in infancy, a treatment for (A.), 783 ; cavities, irrigation of (A.), 888
Enamel, effect of toxæmia on formation of, 802
Encéphalite Epidémique, L' : Ses Origines (Réné Cruchet) (R.), 287
Encephalitis, chronic epidemic, observations on harmine in the treatment of (T. R. Hill and C. Worster-Drought), 647 ; epidemic, a survey of (A.), 1267 ; lethargica, accused persons suffering from (P.I.), 1175 ; epidemic, Cruchet's "Encéphalomyélite subaiguë diffuse" and (Constantin von Economo), 121 ; in a very young infant (Alan Moncrieff), 496 ; periaxialis diffusa (Schilder's disease), a case of (C. T. Champion de Crespigny and H. H. Woollard), 864 ; post-vaccinal (P.I.), 102, 845; (A.), 1154; case of (G. N. Grose), 381; fatal case of, 636 ; a study in (Thomas F. Maclaughlin), 599 ; vaccination and (C.), 743
"Encéphalomyélite subaiguë diffuse," Cruchet's, and epidemic encephalitis lethargica (Constantin von Economo), 121
Encephalomyelitis, acute disseminated, following vaccination (Cecil D. Coyle and E. Weston Hurst), 1246 (C.), 1331 : post-vaccinal : Prof. Turnbull's report to the coroner, 43
Endocrine Disorders (Hans Curschmann) (R.), 985
Endocrinology, An outline of (W. M. Crofton), 2nd ed. (R.), 232
Energen foods, 1022
Enuresis in children, treatment of (A.), 396
Enzyme Actions and Properties (Ernst Waldschmidt-Leitz) (R.), 176
Ephedrine, action of, in relieving certain painful accompaniments of leprosy and lepra reaction (Robert G. Cochrane), 551
Epidemiology in Iceland (A.), 783 ; Old and New (Sir William Hamer) (R.), 337
Epilépsie, Le Syndrome (O. Crouzon) (R.), 287
Epilepsies, discussion on the, 553
Epilepsy, cholesterol of the blood plasma in (Minnie Gosden, J. Tylor Fox, and W. Russell Brain), 12 ; problems of (L.A.) 27 ; (C.), 849
Epinephrine (J. J. R. Macleod), 110
Epithelioma in alveoli of maxilla, implantation of, from primary growth in tongue (J. Bagot Oldham), 873
Epsom College, annual general meeting of governors, 44 ; Founder's Day, 309 ; scholarships at, 640, 1116 : work of (A.), 1317
Epsomian Club, annual meeting and dinner, 1333
Ergosterol, irradiated, mode of action of, on myelin forms of lecithin (C. J. Bond), 328
Ergot, proper method of including in the Pharmacopœia, discussion on, 1040
Erysipelas, facial (A.), 567
Erythema nodosum, infectivity of (J. O. Symes), 1033
Essen-Möller, E., on surgical tendencies of modern obstetrics, 500
Essex, M.O.H.'s report, 1278
Ether inhaler (G. A. Metcalfe) (N.I.), 288
Ether oil anæsthesia, rectal, with special reference to brain surgery, 558
Ethylene and oxygen anæsthesia, 557
Euthanasia and morphia, 1111
Evans, Daniel Martin Baden (O.), 1119
Evans, Geoffrey, Use of the term "gastroptosis" (C.), 1219
Evans, J. Jameson, on blindness in old age, 665
Evans, Laming, on reconstructive surgery in paralytic deformities of the leg, 87
Evers, Norman, and Elsdon, G. D., The Analysis of Drugs and Chemicals (R.), 882
Evidence, the liability to give (M.L.), 403
Ewart, William (O.), 346, 408
Examination, first M.B., the schoolmaster and the, 1292
Exhibition, London Medical, 746, 894, 949, 983 ; New Health Society's, 1055
Exophthalmic goitre, medical treatment of (A.), 994 ; place of surgery in (L.A.), 131 ; *and see* Graves's disease
Exotische Krankheiten (Martin Meyer), 2nd ed. (R.), 127
Experiments on animals (P.I.), 153, 1014, 1067; (A.), 296; on frogs and men (A. V. Hill), 261
Ex-service men and rheumatism (P.I.), 1287 ; and the seven years' limit (P.I.), 1121 ; institutional treatment of (P.I.) 1122 ; medical and surgical treatment of (P.I.), 1288
Eye, adaptation of, to darkness (A.), 344 ; in General Medicine, The (A. Maitland Ramsay) (R.), 1097 ; minor injuries of the, in industry, 664 ; Staining : Vitale Färbungen am Menschlichen Auge (O. Knüsel and P. Vonwiller) (R.), 932 ; Vascularisation of the vertebrate, 68 ; Ear, Nose, and Throat Nursing, A Text-book of (Abby-Helen Denison) (R.), 1044
Eyes and their Care, Your (Edgar S. Thomson) (R.), 533
Eyesight among Jews, 52 ; injuries in engineering workshops (P.I.), 308

F

Factory girls, holidays for (C.), 414
Fæces, microscopic examination of (S. W. Patterson) (A.D.), 727, 785
Fairbairn, J. S., on the training of midwives, 1092
Fairley, A., on after-effects of war gassing in relation to pulmonary tuberculosis, 91
Fairlie, H. P., on ethylene and oxygen anæsthesia, 557 ; and Ross, J. Stuart, Handbook of Anæsthetics, 3rd ed. (R.), 178
Falconer, A. W., Congenital ectodermal defect, 656
Falkiner, Ninian McIntyre (O.), 1016
Falkland Islands, Health conditions in, 362

Familial ataxias, 1095
Farr, Robert Emmett, Practical Local Anæsthesia, 2nd ed. (R.), 1199
Fat as an essential article of diet (A.), 565
Faulds, J. Steven, and Cowan, John, on syphilis of heart and aorta, 330
Fear, 254
Feeble-minded, suggestion and association tests in the, 1093
Fellowship of Medicine and Post-Graduate Medical Association: courses and lectures, 100, 122, 309, 359, 408, 498, 794
Femur, fractures of neck of, 86
Fertility, influence of caffeine on, 575; tests, interpretation of (C.), 1063, 1116
Fever hospital, twenty years' experience at a (A.), 510
Fibrositic nodules, painful (C.), 533, 590, 642
Fife, M.O.H.'s report, 1389
Filarial periodicity, mechanism of (Philip Manson-Bahr) (C.), 45
Fildes, Miss, on the difficult child, 1262
Finlay, T. Y., King, J. B., and Watson, Chalmers, Therapeutic value of irradiated milk in the treatment of rickets, 704
"Fisgard" (C.), 1292, 1344
Fish, canned (R. and A.R.), 1051
Fishberg, Maurice, on apical and subapical tuberculosis, 770
Fistulæ, congenital, simple method of dealing with (R. J. McNeill Love), 122
Fitness for work, certification of (C.), 850
Flagg, P. J., The Art of Anæsthesia, 4th ed. (R.), 882
Flat-foot, pre-hallux as a cause of, 88
Fletcher, George, on James Braid, 929
Fletcher, Harvey, Speech and Hearing (R.), 615
Fletcher, Sir Walter, Thoughts on University College, 105
Fluke infections of man's biliary passages (A.), 722
Focal sepsis and diseases of the eye, discussion on, 385; in diseases of skin, 361
Fomites, infection by (L.A.) 1265
Food (Robert McCarrison) (R.), 73; and Nutrition, Chemistry of (Henry C. Sherman), 3rd ed. (R.), 1368; Health, Vitamins (R. H. A. and Violet Plimmer), new ed. (R.), 718; Investigation, Index to the literature of, 208; the life of (L.A.), 988; the Nation and its (Rt. Hon. C. Addison) (R.), 54; poisoning, acute, diagnosis of (W. G. Savage) (A.D.), 1054, 1107; bacterial, discussion on, 279
Foodstuffs, differentiation of the properties of, 1292
Foot, fore part of the, pain in the, 902; reconstruction, factors in (C. Hope Carlton), 605
Foot-and-mouth disease (L.A.), 617
Foote, Edward Milton and Livingstone, Edward Meakin, Principles and Practice of Minor Surgery, 6th ed. (R.), 775
Ford-Robertson, W. M., on some cases of mental disorder, 254
Forceps and the size of the head (C.), 850
Foreigners in Great Britain and Ireland, medical practice by (A.) 1206
Forrester-Brown, M., on scoliosis, 284
Fossil man of Peking, the (Sir Arthur Keith), 683
Foulerton Research Studentship, 958
Fowl, on the alleged experimental production of malignant tumours in the (A. M. Begg and W. Cramer), 697 (C.), 848, 899
Fowl sarcoma, investigations into blastogenic principle in (Ernst Fränkel), 538, 763
Fowls, filtrable tumours of (A.), 886
Fowweather, Frank Scott, Handbook of Clinical Chemical Pathology (R.), 72
Fox, J. Tylor, Brain W. Russell, and Gosden, Minnie, Cholesterol of the blood plasma in epilepsy, 12
Fractures, Use of bone-plates in the treatment of (H. H. Greenwood), 21; and Dislocations, Treatment of, in General Practice (C. Max Page and W. Rowley Bristow), 3rd ed. (R.), 881
France, medical tour in, 903; the medico-legal expert in, 22
Fränkel, Ernst, Investigations into the blastogenic principle in fowl sarcoma, 538, 763
Fraser, F. R., on place of human physiology in the training of medical students, 478
Fraser, J. S., on intranasal dacryocystotomy, 67
Fraser-Harris, D. F., The Rhythms of Life (R.), 177
Freund, Leopold, on X ray treatment of wounds, 610
Frontal tumours, diagnosis of, discussion, on, 661
Fry, W. Kelsey, The craft of surgery (C.), 1282
Fulkerson, Lynn Lyle, Gynæcology (R.), 827
Fullerton, Andrew, Progress in urology (Campbell oration) 1345
Fulton, J. F., James Black's description of contractility of capillaries (1825) (C.), 1010
Fungi, some forms of cutaneous eruption due to, 1146
Funiculitis, chronic parasitic, in Egypt (M. F. Sorour), 708
Fürst, K., Grundriss der Arzneimittellehre für die Behandlung von Hautkrankheiten (R.), 1264

G

Gabriel, W. B., Syringe and needle for the injection of hæmorrhoids (N.I.), 1367
Gairdner, Matthew William (O.), 1119
Gall-bladder and bile-ducts, surgery of the (R. P. Rowlands) (Bradshaw lecture), 1075
Gall-stones, the prevalence of (A.), 620
Garrison, Fielding, H., An Introduction to the History of Medicine, 4th ed. (R.), 717
Gas attack, air, protection against (P.I.), 103; gangrene in the American Army (A.), 836; poisoning and gunshot wounds of chest in relation to pulmonary tuberculosis, 91; deaths by, 101
Gases and Liquids (J. S. Haldane) (R.), 667
Gastric and Duodenal Ulcer (A. F. Hurst and Matthew J. Stewart) (R.), 1312
Gastric disease, diagnosis of (C.), 1172, 1221; diseases, relative value of different methods of diagnosis in, discussion on, 1041; ulcer, aluminium silicate in the treatment of (A)., 621
Gastritis, the pathology of (A.), 292
"Gastroptosis," use of the term (C.), 1219
General Medical Council: Committee business, 1254; election of direct representatives, 1001, 1209; (C.), 848, 1064, 1221; penal cases, 1191, 1252; presidential address, 1161; winter session, 1161
General paralysis of the insane, diagnosis and cure of (A.), 671; results of malarial therapy, 402; and other disorders, sulfosin treatment of (Knud Schroeder), 1081
General practice, the renaissance of (L.A.), 933
Genozo tooth paste (N.P.), 158
Germany, Health of, 246
Gershenfeld, Louis, Bacteriology and Sanitary Science (R.), 718
Gerson diet in tuberculosis, 1281
Gibberd, G. F., Contribution to the study of the maternal death-rate, 535
Gibbs, Nancy K., Diagnosis and treatment of anæmia in school-children, 550
Gibraltar, public health in, 1128
Giles, Dr. A. E., elected Master of the Drapers Company, 258
Gilhespy, F. P., on persistent nasal catarrh in children, 773
Gillespie, R. D., Sleep: the Treatment of its Disorders (R.), 716
Gillett, Henry T., Vaccination, or inoculation against small-pox (C.), 952
Girdlestone, G. R., on operative treatment of tuberculosis of larger joints, 711
Glandular fever, an epidemic of (A.), 345
Glasgow, M.O.H.'s report, 520; Mental Colony, 844; school hygiene in, 959
Glaucoma, acute, emotion and (W. S. Inman), 1188; ætiology and non-operative treatment of, 633; cataract and, treatment of, in Madras (A.), 1376; Lagrange's operation for, 663
Glaxo malted food, 1180
Gleave, Humphrey H., Prognosis in malignant melanoma, 658
Gloucestershire, S.M.O.'s report, 579
Glucose, dosage of intravenous (A.), 723; intolerance in various dermatoses (Alex. R. Somerford), 1140; Why, when, and how to use it, 558
Glycerin, use of, in Cæsarean section (Margaret Salmond), 659
Glycogen, insulin, and epinephrine (L.A.), 179; of the liver, 2; of the muscles, 4; physiology of, and rôle of insulin and epinephrine in carbohydrate metabolism (J. J. R. Macleod), 1, 55, 107; (L.A.), 179
Glycosuria, renal, contribution to the study of (A. Muir Crawford), 214
Glynn, Ernest Edward (O.), 677, 741
Goitre, mass effect of, 1280; operation for (A.), 30
Goldthwait, J. E., on treatment of common spinal conditions, 86
Gomm, Thos. W., Rivers pollution (C.), 47
Gonococcal meningitis, 1166
Gonorrhœal infections in the male, diagnosis of (A. B. Rosher) (A.D.), 836
Good, T. Saxty, on suggestion and association tests in the feeble-minded, 1093
Good faith and reasonable care (L.A.), 1371
Goodall, Alexander, and Calder, A. M., Importance of transfusion in treatment of pernicious anæmia, 1044
Goodfellow, T. A., on tonsils and adenoids, 335
Goodman, Dr. Roger Neville, freedom of Kingston conferred on, 958
Gordon, A. Knyvett, Shewry *v.* Maybury (C.), 147
Gordon, John, and Armitage, George, in collaboration with others, Use of a new quinoline derivative in the treatment of infection, 968
Gordon, Thomas Eagleson, (O.), 255
Gordon, William (O.), 795
Gosden, Minnie, Fox, J. Tylor, and Brain, W. Russell, Cholesterol of the blood plasma in epilepsy, 12
Gould, Adrian Gordon, and Smiley, Franklin, Community Hygiene (R.), 881
Goulden, Charles, on ocular manifestations found in head injuries, 69
Graham, Surg.-Lt. Comdr. Gilbert Malise (O.), 1234
Graham-Stewart, A., Relation of the tonsils to rheumatic conditions (C.), 742
Granger, Frank Butler, Physical Therapeutic Technic (R.), 1263
Graves, William P., Gynæcology, 4th ed. (R.), 614
Graves's disease and thyroidectomy (W. H. C. Romanis), 113
Gray, E. Temple, on the medico-legal expert in France, 22
Greek Medicine (Arthur J. Brock) (R.), 1046
Green, L. J., Case of spasm of cervix uteri, 22
Green-Armytage, V. B., and Hodge, E. H. Vere, Birch's Management and Medical Treatment of Children in India, 7th ed. (R.), 178
Greenfield, J. G., on significance of variations in cerebro-spinal fluid, 612
Greenish, Henry G., A Text-book of Materia Medica, 5th ed. (R.), 828
Greenwood, H. H., Use of bone-plates in the treatment of fractures, 21
Gregg, A. L., Tropical Nursing (R.), 74
Gregory, Hazel Chodak, on chronic dyspepsia in children of school age, 385
Gresham lectures, 798
Griffiths, Joseph, Approaching changes in the hospital system in this country (C.), 1390
Grose, G. N., Case of "post-vaccinal encephalitis," 381
Group or State medicine (A.), 885
Groves, E. W. Hey, on fractures of the neck of the femur, 86
Growth-inhibiting substances (A.), 342
Guardians, boards of, and admissions for "incomplete abortion" (A.), 1206
Guernsey, M.O.H.'s report, 1388
Guild of St Luke, 798, 800
Gunn, J. A., Introduction to Pharmacology and Therapeutics (R.), 1147
Gunshot wounds of the chest in relation to pulmonary tuberculosis, 91
Guy's Hospital, opening address at, 731
Gynæcological Technic (Thomas H. Cherry) (R.), 1045
Gynæcologist's training, the 500
Gynæcology (Lynn Lyle Fulkerson) (R.), 827; (William P. Graves), 4th ed. (R.), 614; for Nurses (Comyns Berkeley), 5th ed. (R.), 560

H

Haberdashers' Company, a medical master of the, 1214
Haden, Russell Landram, Clinical Laboratory Methods, 3rd ed. (R.) 1046; Dental Infection and Systemic Disease (R.), 1148
Hämatologie, Einführung in die (A. von Domarus) (R.), 1046
Hæmoglobin percentage of blood in schoolchildren, 550
Hæmorrhoids, syringe and needle for injection of (W. B. Gabriel) (N.I.), 1367; treatment of (C.), 410, *and see* Piles
Halcyon, or the Future of Monogamy (Vera Brittain) (R.), 802
Haldane, J. S., Gases and Liquids (R.), 667
Hall, W. S., The purchase of dangerous drugs, (C.), 1221
Hallen, A. H., Contagious abortion (C.) 953
Halliburton, W. D., and McDowall, R. J. S., Handbook of Physiology, 18th ed. (R.) 559
"Halo" method of measuring the diameter of red blood corpuscles, simplification of (D. Merlin Pryce), 275
Hamer, Sir William, Epidemiology Old and New (R.), 337
Hamill, P., on some principles of therapeutics, 770
Hamilton, C. K. T., and Russell, H. B., Heart Disease in Childhood (R.), 231
Hamilton, T. S., and Mitchell, H. H., Biochemistry of the Amino-acids (R.) 559
Hammer, Bernard W., Dairy Bacteriology (R.), 882
Hampshire, M.O.H.'s report, 1388
Handfield-Jones, R. M., Pitfalls in urological diagnosis, 1135
Harben lectures and vitamin B (L.A.), 1316
Hare, Dorothy C., and Ross, Joan M., Syphilitic disease of the pulmonary arteries, 806; and Burrell, L. S. T., Case of tuberculous polyserositis with predominant pericardial involvement, 1303
Hare, Hobart Amory, Use of Symptoms in Diagnosis of Disease, 9th ed. (R.), 986
Hare, Humphrey, J. H., Inherited tendency to supernumerary digits (C.), 639
Harley Street Calendar, The (H. H. Bashford) (R.), 932
Harlow, F. Wilson, Self-retaining tubes for the operations of cæcostomy and cystostomy, 119
Harmine in the treatment of chronic epidemic encephalitis (T. R. Hill and C. Worster-Drought), 647; or hyoscine for encephalitis (C.), 794
Harpenden, hospital accommodation at, 1290
Harrison, L. W., on diagnostic and other errors in questions of venereal disease, 981
Hart, Bernard, on the difficult child, 1261
Hartwell, Gladys A., and Mottram, V. H., The brown *v.* white bread controversy, 892; (C.), 953
Harveian oration, 784; (L.A.), 883, 911
Harvey, Circumstances in the life and times of William (Sir Wilmot Herringham), 911
Hasler, J. K., on anæsthesia in rectal surgery, 1258
Hastings, M.O.H.'s report, 578
Haudek, Martin, on early diagnosis of cancer of stomach, 227
Hauduroy, P., Les ultravirus et les formes filtrantes des microbes (R.), 177
Hay-fever, asthma and (J. E. R. McDonagh), 271
Head injuries, discussion on, 1307; ocular manifestations found in, 68
Heaf, F. R. G., on sanocrysin in pulmonary tuberculosis, 771
Heald, C. B., Electrical treatments in acute conditions, 974, (C.), 1222
Health Committees, district medical officers and (P.I.), 1288; exhibition in London, 1053; good (Ian S. Thomson) (R.), 73; officers in U.S.A., salaries of, 240; propaganda, a, 54, value of, 879; services in Scotland, reorganisation of, 739
Heart, auricle of, enlargement of left (Francis Bach and T. S. Keith), 766; beat, on restarting the (C.), 585; block, dilatation of auricles resulting from (Albert A. Fitzgerald Peel), 1248; disease in childhood (H. B. Russell and C. K. T. Hamilton) (R.), 231; statistical study of (A.), 565, ophthalmoscopic signs in (A.), 397, What You Should Know About (Harold E. B. Pardee) (R.), 231; electrocardiographic study of, during and after nitrous oxide anæsthesia (G. E. S. Ward and Samson Wright), 1184; in Modern Practice, the (W. D. Reid), 2nd ed. (R.), 231; Katzenstein method of testing the, 405.
Heart and aorta, syphilis of, discussion on, 330
Heat, radiant, *see under* Radiant heat
Heaton, Trevor, Resistance to malignant growth, 762
Heberden, William, An Introduction to the Study of Physic (R.), 827
Hebert, G. T., on X ray findings in pulmonary tuberculosis, 90
Henderson, A. Wingate, Some observations on gas and oxygen in general surgery, 873
Henderson, Edward Erskine (O.), 530
Henderson, Lt.-Col. George (O.), 34
Henderson, Melvin, on reconstructive surgery in paralytic deformities of the leg, 87
Hendry, A. W., Note on the treatment of neurasthenia, 1249
Henry, Arnold K., A white black-board for the operating theatre (C.), 1222
Henry C. Bowdler, Medical Sickness, Annuity and Life Assurance Society, Ltd. (C.), 952
Heritage, Kenneth, Case of cicatricial stenosis of œsophagus, 708
Hernaman-Johnson, F., Management of patients suffering from cancer of breast, 1125
Hernia, sclerosing injections in the treatment of (A.), 936
Heroin, new regulations about, B.M.A. and, 221
Herringham, Sir Wilmot, Circumstances in the life and times of William Harvey (Harveian oration), 911
Hertslet, Lewis E., Skin: its use in Six Phases (R.), 828
Hertzler, A. E., Diseases of the Thyroid Gland, 2nd ed. (R.), 775
Hewer, E. E., and Sandes, G. M., Introducton to the study of the nervous system (R.), 1147
"Hiccup, epidemic" (A. Salusbury MacNalty), 62
Higgins, J. B., on X ray treatment of commoner microbic diseases of skin, 609
Highlands and Islands (Medical Service) Fund (P.I.), 154, 1013, 1173
High-Veld, the call of the, 962
Hill, A. V., Experiments on frogs and men, 261
Hill, E. R., on the difficult child, 1262
Hill, Leonard, Brown *v.* white bread (C.), 1063
Hill, N. Gray, on the value of tonsillectomy in the prevention of acute rheumatism, rheumatic carditis and chorea, 571
Hill, T. R., and Worster-Drought, C., Harmine in the treatment of chronic epidemic encephalitis, 647
Hip, congenital dislocation of, early diagnosis and treatment of, 86, treatment of, 1165; osteo-arthritis of the, chordotomy in the treatment of (A. S. Blundell Bankart), 378; (C.), 527, 528
Histology, Essentials of (Sir Edward Sharpey Schafer and H. M. Carleton), 12th ed. (R.), 1370
History, a new kind of (A.), 1270
Hodge, E. H. Vere, and Green-Armytage, V. B., Birch's Management and Medical Treatment of Children in India, 7th ed. (R.), 178
Hodgson, Graham, on diagnostic value of X rays of temporal bone, 1260; on radiography of skull, 1308
Hoesslin, H. V., and others, Theoretische und Klinische Pharmakologie (R.), 1200
Hog-cholera bacillus, American, two cases of human infection by (David Nabarro, P. Bruce White, S. C. Dyke, and W. M. Scott), 868
Hogg, F. S. D., Forceps and the size of the head (C.), 850
Holidays, annual (A.), 1104; (P.I.), 1119
Holland, M.O.H.'s report, 688
Holloway sanatorium, nurses' home at, 950
Holmes, Gordon, on dissociation of ocular movements, 819; on epilepsy, as a cerebral disease, 554
Holthusen, A. W., Skin forceps (N.I.), 288
Home, W. E., The health of seamen (C.), 849
Home pests, destruction of, 750
Honolulu, Pan-Pacific Surgical Congress at, 353, 1362
Honour for a medical man, 958
Hop-picking, the occupational diseases of (Beatrice M. Smithies), 494; (C.), 638
Horder, Sir Thomas, on treatment of pleuritic effusions, 278
Hose, Charles (A.), 1106
Hospital accommodation and expenditure (P.I.), 1339; animals, at Liverpool University Veterinary School, 49; assessment (A.), 1373; auxiliary, in the country, 41; banner, a, 843; bazaar, a remarkable, 962; claims for payment by a, 1398; coöperation at Newcastle, 959; coördination at Bristol, 305; fancy, a, 1073; fever, twenty years' experience at a (A.), 510; film, a, 958, 1341; formulary, a, 1180; fund, a provincial, 1321; hunt meet at a, 1177; information, central bureau of (L.A.), 1266; planning, some aspects of, 590; policy of the British Medical Association, discussion at annual meeting, 192; research, a new (A.), 1050; Saturday Fund, 640, Birmingham, 66, death of founder of, 853; Saving Association, annual report, 1162; system in this country, approaching changes in the (C.), 1390; training in dietetics (A.), 137

HOSPITALS.—Aberdare and District General Hospital, burning of, 792—Aberdeen Royal Infirmary, result of appeal, 926—Abergavenny Cottage Hospital, laying of foundation-stone of new wing, 1222—Balham: Weir Hospital, annual report, 837—Belfast: Royal Victoria Hospital, appointments, 986—Belgrade Children's Hospital, appeal for, 790—Belgrade: Elsie Inglis Hospital, opening of, 840—Bethlem Hospital, approaching removal of, 359—Birkenhead General Hospital, opening of new out-patient department, 820—Birmingham Children's Hospital, opening of extensions, 1123—Birmingham Cripples Hospital, annual report, 748—Birmingham: Dudley Road Hospital, enlargement of, 812—Birmingham General Hospital, sesqui-centenary celebration, 1286—Boscombe Hospital, enlargement of, 259—Bradford Municipal Hospital, annual report, 1235—Bradford Royal Infirmary annual report, 1290—Bristol General Hospital, annual report, 1289—Bristol Hospital for Women and Children, enlargement of, 1235—Bristol Homœopathic Hospital, opening of new children's ward at, 1340—Bristol Royal Infirmary, annual report, 1289—British Dental Hospital, annual report, 302—British Hospital for Mothers and Babies, opening of new administrative block, 1386—Brompton Hospital for Consumption, dinner in support of funds, 101—Bury Infirmary, opening of extension, 683—Cambridge: Addenbrooke's Hospital, appeal for, 904—Cancer Hospital: Fulham Road, radiology at, 1116—Castleton, Normanton and District Hospital, opening of, by Princess Mary, 531—Charing Cross Hospital, annual report, 742, Nurses' hostel for, 258—Cheltenham General Hospital, enlargement of, 284—Cheshire County Mental Hospital, centenary of, 122—Clapham Maternity Hospital, annual report, 806—Clatterbridge Isolation Hospital, erection of new wing, 1002—Cosham: Queen Alexandra Hospital, investigation of complaints, 693, 853, report of investigation committee, 1417—Deal and Walmer War Memorial Hospital, enlargement of, 588—Dental Hospital of Ireland, annual report, 1235—Derby City Hospital, equipment of new, 1157—Derbyshire Women's Hospital, opening of new buildings, 925—Dublin: Jervis Street Hospital, enlargement of, 1238—Dublin: Mater Misericordiæ Hospital, annual report, 1096—East Ham Isolation Hospital, Ministry of Health inquiry, 1216—East Ham War Memorial Hospital, opening of, by the Queen, 258—East Sussex Hospital, opening of new children's ward, 205—Edenbridge and District War Memorial Hospital, new building, 49—Edinburgh Royal Infirmary, need for extension of, 1280—Evelina Hospital for Children, convalescent home for, 904—Glasgow: Royal Samaritan Hospital for Women,

first medical report, 1238—Gravesend and North Kent Hospital, opening of new women's wards, 312—Greenwich: Miller General Hospital, annual meeting, 1327, finances of, 1176—Guy's Hospital, annual report, 71—Hampstead General and North-West London Hospital, opening of extensions, 1074—Harrow Hospital, enlargement of, 362, 1178—Hitchin: North Hertfordshire and South Bedfordshire Hospital, opening of new wing, 205—Hospital for Sick Children, annual report, 382—Hull: East Hull Maternity Hospital and Clinic, opening of new, 1032—Ilford: King George's Hospital, appeal for, 101—Infants Hospital, Vincent Square, gift by Mr. R. Mond, 1177—Johannesburg General Hospital, size and finances of, 1392—King's College Hospital, guinea scheme at, 925—Leeds Hospital for Women, paying beds at, 1290—Leicester Royal Infirmary, opening of reconstructed West Ward, 1106—Liverpool Open-Air Hospital for Children, annual report, 329—London, Central: Throat, Nose and Ear Hospital, opening of new wing, 1106—London Foot Hospital, appeal for funds, 205—London Hospital, report of House Committee, 582—London Lock Hospital, administration of, Parliament and the (A.), 185—Manchester: Ancoats Hospital, post-graduate lectures at, 589—Manchester Babies' Hospital, annual report, 48—Manchester Foot Hospital, opening of, 693—Manchester: Grangethorpe Hospital, closing of, 959—Margate: Royal Sea Bathing Hospital, annual report, 1272—Maudsley Hospital, programme of clinical lectures, 744—Middlesex Hospital, finance of, 1018; rebuilding of, 101, 244—Midland Homœopathic and General Hospital, annual report, 589—Mount Vernon Hospital, alteration in scope of, 1056, staff appointments, 95—National Hospital for Paralysed and Epileptic (Queen-square), annual report, 414—Newcastle-on-Tyne, Victoria Infirmary, annual report, 256—Newport (Mon.): Royal Gwent Hospital, annual report, 1290—Northampton General Hospital, gift to, 312—Norwich: Jenny Lind Hospital for Children, opening of new additions, 47—Nottingham General Hospital, costs at, 1070, enlargement of casualty department, 694, University ward at, 1142—Oxford: Radcliffe Infirmary, gift of site for extensions by Sir W. Morris, 1152—Oxford: Wingfield Orthopædic Hospital, work of, 1234—Paignton Hospital, enlargement of, 589—Pembrokeshire War Memorial Hospital, opening of new children's ward, 359—Poplar Hospital for Accidents, growth and work of, 1234—Preston Royal Infirmary, allocation to building fund, 312, opening of new wing, 359—Prince of Wales's General Hospital, annual report, 748—Queen Alexandra Hospital, Millbank, opening of new wing, 1177—Queen Charlotte's Maternity Hospital, laying of foundation-stone, 908, new buildings, first sod cut for, 531—Queen Mary's Hospital for the East End, annual festival dinner, 1170—Queen's Hospital for Children, annual report, 550—Redcar Hospital, opening of, 298—Rochester: St. Bartholomew's Hospital, annual report, 1235—Royal Dental Hospital, at home and dinner (A.), 1156—Royal London Ophthalmic Hospital (Moorfields), annual report, 375, History and Traditions of (W. Treacher Collins) (A.), 888—Royal Sussex County Hospital, gifts by Mr. Bernhard Baron to, 359—Royal Waterloo Hospital, out-patient department regulations, 683—St. Asaph Joint Hospital, opening of new, 1044—St. Bartholomew's Hospital, annual report, 588; "lighthouse" at, the 1340; rebuilding of, 128; sale of, lands, 789—St. George's Hospital, annual report, 637—St. John and St. Elizabeth, Hospital of, annual report, 258—St. John's Hospital for Diseases of the Skin, annual report, 531—St. Mary's Hospital, annual report, 703, gift of £20,000 by Lord Iveagh to Therapeutic Inoculation Department, 258—St. Thomas's Hospital, annual report, 577; presentation to Bedell of medical school, 155—Salford Royal Hospital, annual meeting, 977—Scunthorpe and District War Memorial Hospital, opening of, 1340—Sheffield: Jessop Hospital for Women, 50 years' work of, 1283—Sheffield: Lodge Moor Hospital; opening of extensions, 742—Sheffield Royal Infirmary, annual report, 1283—Shrewsbury: Eye, Ear and Throat Hospital for Shropshire and Wales, annual report, 1290—Shropshire Orthopædic Hospital and Agnes Hunt Surgical Home, Oswestry, annual report, 1234—Sidcup: Queen's Hospital, closing of, 545—South Devon and East Cornwall Hospital, opening of extension, 49—South Hants and Southampton Hospital, opening of new wing, 106—Southend General Hospital, laying of foundation-stone of new building, 1116—Southport Homœopathic Hospital, sale of, 1166—Staffordshire, North, Orthopædic Hospital, enlargement of, 1306—Staffordshire, North: Royal Infirmary; dedication of seven endowed beds, 1306—Stockport Infirmary, inadequacy of present building, 1235—Stornoway Hospital, enlargement of, 205—Sunderland: Monkwearmouth and Southwick Hospital, removal of, 602—Sunderland Royal Infirmary, enlargement of, 602—Tenbury Cottage Hospital, closing of, 1170—Torbay Hospital, contributory scheme, 589, 1218—Treloar Cripples' Hospital, alterations at, 794; coming of age of, 531; (A.), 1155; laying of foundation-stone of new, 959—Tropical Diseases, Hospital for, enlargement of, 744—Trowbridge Hospital, opening of new, 640—Ulster Hospital for Women and Children, annual report, 49—Wakefield Clayton Hospital, gift of new women's ward to, 284—Wallingford District Hospital, new building, 258—Walsall General Hospital, annual report, 1235—Warminster Cottage Hospital, opening of, 929—West Bromwich General Hospital, annual report, 843—West Kent Joint Isolation Hospital, opening of new administrative building, 277—West London Hospital, annual report, 1289—Westminster Ophthalmic Hospital, annual report, 531—Worthing Hospital, enlargement of, 1235

Hospitals and motoring accidents (P.I.), 307, 956, 1395; 531, 786, 962, 1035, 1290; and motorists, 50; and road accidents, 649, 1280; encroachment of, on private practice, 944; general practitioners in, place of, 944; gifts to, by Sir Albert Levy, 82; in Queensland, 352; in Sweden and Denmark, modern (H. S. Souttar), 242; Local Government Act in relation to voluntary (H. P. Newsholme), 1020; London voluntary, 1020; Public Assistance Committees and, 786; rating of, 197, 260; Royal Family and, 1018; Sheffield, 589; voluntary, Lord Moynihan on, 957

Houses, unfit, closing of, in Scotland (P.I.), 203.

Housing Bill (P.I.), 1065; conditions in Edinburgh, 191; subsidy, the (P.I.), 151, 200

Howarth, W. G., on tuberculosis of larynx, 773

Howe, Lord, on the doctor and the motorist, 1094

Howell, B. Whitchurch, Early treatment in acute anterior poliomyelitis (C.), 357

Huard, Serge, Les Accidents de la Cholecystéctomie (R.), 614

Hughes, Basil, Avertin anæsthesia (C.), 1220

Hull, M.O.H.'s report, 301

Hungary, number of medical practitioners in, 1059

Hunt, Elizabeth, on some forms of cutaneous eruption due to fungi, 1146

Hunt, T. C., Recent aids in the diagnosis of some common disorders, 751

Hunt meet at a hospital, 1177

Hunter, Donald, on modern treatment of lead poisoning, 901

Hunter, F. T., and Wheeler, Roy R., Laboratory Manual of the Massachusetts General Hospital, 2nd ed. (R.), 614

Hunterian lecture, 313

Huntingdonshire, M.O.H.'s report, 1388

Hurst, A. F., on abdominal pain, 226; on focal sepsis, 386; on pathogenesis and treatment of asthma, 498; Precursors of carcinoma of the stomach (Schorstein lecture), 1023: and Stewart, Matthew J., Gastric and Duodenal Ulcer (R.), 1312

Hurst, E. Weston, and Coyle, Cecil D., Acute disseminated encephalomyelitis following vaccination, 1246

Hutchison, Robert, on dyspepsias of childhood, 903

Hutton, Isabel Emslie, The Hygiene of Marriage, 2nd ed. (R.), 177

Huxley, Frances M., Treatment of sterility in women (M.T.T.), 138

Huxley lecture on relation of crystal structure to medicine (Sir W. Bragg), 1293

Hydatid disease, intradermal test for (A.), 1270; of lung, two cases of, 1095

Hydrogen, the discovery of two different forms of (A.), 620

Hydrology, International Society of Medical, Conference at Budapest, 567, 947

Hygiene and Public Health, Elements of (J. P. Modi), 3rd ed. (R.), 1200; and Tropical Medicine, the opening of the new school of, 148, 175; Community (Franklin Smiley and Adrian Gordon Gould) (R.), 881; Naval (Thomas B. Shaw) (R.), 1097; Nurses' Handbook of (L. E. H. Whitby), 2nd ed. (R.), 560; on merchant ships (P.I.), 101

Hyperthyroidism with mania, relieved by operation (J. Murray Black), 277

Hypertonic mineral waters, action of, 947

Hypopyon ulcer of the cornea (A. Christie Reid), 64

I

Iceland, epidemiology in (A.), 783; observations in: history and health, 748, 801

Ilford, M.O.H.'s report, 96; S.M.O.'s report, 407

Illegitimate children in Scotland (P.I.), 1065, 1173

Immunisation, cutaneous, 1281

Immunised blood, transfusion of (A.), 398

Immunité et Vaccinothérapie (Louis Moinson) (R.), 1096

Imrie, David A., Radiographic and microscopic appearance of infection of teeth and surrounding tissues, 375

Incompatibility in Prescriptions and How to Avoid it (Thomas Stephenson), new ed. (R.), 828

Indecency in Hyde Park, charges of (P.I.), 1120

INDIA, CORRESPONDENCE FROM.—Bombay, new disease in, 1059—Cholera in Bengal, 42—Health schools, 43—Jail reports, 1386—Leprosy publication, a new, 527—Medical Council, All-India, 526; Medical education and registration, 1059—News items, 1059—Radium Institute at Patna, 42—Tuberculosis in Bengal, 526—Vaccination in the Punjab, 43—Women's Medical Service, 42—Workmen's Compensation, 42—Yellow peril, the, 1385

India, medical appointments in (P.I.), 1233; medical research in (P.I.), 102, 1014; opium in (P.I.), 202, 1015; relief of blindness in (L.A.), 1315; Work of Medical Women in (Margaret I. Balfour and Ruth Young) (R.), 613

Indian Army, regimental colours of the (C.), 1238; customs, the indictment of certain, 1072; sanitation, an engineer on (A.), 992

Indigestion, differential diagnosis of causes of, 755

Industrial diseases (P.I.), 202; health, partnership in (A.), 989, Education Society, luncheon given by Lord Melchett, 1001, Research Board, The (A.), 293; pharmacy, the progress of (A.), 182; Welfare Society, 531

Industries, health in British (A.), 341

Industry, contribution of medicine to (A.), 1051

Inebriety, some gaps in the scientific study of, 124

Infant and Young Child, The (John Lovett Morse and others), 2nd ed. (R.), 1370

Infant mortality (A.), 393; in Kensington (A.), 938

Infants and Children, Nutrition of Healthy and Sick (E. Nobel, C. Pirquet, and R. Wagner), 2nd ed. (R.), 1146

Infections of bones and joints, "no dressing" treatment of, 88

Infectious disease in Austria, 741; in England and Wales, weekly returns of, 47, 96, 145, 185, 250, 302, 355, 408, 479, 524, 582, 636, 688, 716, 798, 848, 908, 956, 1006, 1061, 1114, 1173, 1224, 1279, 1330, 1390

Infectious Diseases, Acute (Jay Frank Schamberg and John A. Kolmer), 2nd ed. (R.), 827
Inflammation, induction of, in treatment of malignant and other local diseases (Harold Burrows), 603
Influenza, a new cause of (A.), 1321
Inman, W. S., Emotion and acute glaucoma, 1188
Insane Mind, The Troubled Conscience and the (Charles Blondel) (R.), 72
Insanitary areas, properties in (P.I.), 1068
Instinct and Intuition (George Binney Dibblee) (R.), 1313
Insulin, effect of, on carbohydrate balance in the rat, 107; effect of, on normal animals, 58; in the treatment of pernicious anæmia (L. von Varga), 764; questionaire on (A.), 31

INSURANCE, NATIONAL HEALTH.—Administration (P.I.), 1396—Approved societies and additional medical treatment (P.I.), 1175; and ophthalmic treatment (P.I.), 1121; and dental treatment (P.I.), 1121; in Scotland, work of, 92—Certificates for convalescence, 943—Certification: disciplinary procedure, 942—Deposit contributors and insurance benefits (P.I.), 201—Employees of practitioners: their position under National Insurance, 839—Gifts and inducements and panel prescriptions (P.I.), 1120—Highlands and Islands Medical Fund (P.I.), 154—Hydrotherapeutic treatment for insured persons (P.I.), 103—Income limit, proposed raising of (P.I.), 1120—Insurance Committees and health lectures (P.I.), 1066; Committees in Scotland, work of, 93, 791; Fund, amount paid into, in 1928 (P.I.), 1340; in the Irish Free State (A.), 182—Inspectors in Scotland, work of, 93—Insured persons in Scotland, drugs for, 791—Medical officers, District, work of, in Scotland, 94; referees and Workmen's Compensation (P.I.), 1120—Ophthalmic clinics (P.I.), 154; service, B.M.A. and an, 223—Panel Conference, 942; patients in Great Britain (P.I.), 102; practitioners, removal of (P.I.), 307—Periodic examinations of insured persons, 945—Pregnant women, a hardship for, 945—Prescribing and dispensing, 943—Prescriptions, panel practitioners' (P.I.), 202—Private practice, encroachment of hospitals on, 944—Records, medical, importance of keeping, 945—R.M.O., reference of cases to, 943—Scotland, working of the Acts in (10th annual report of Scottish Board of Health), 92—Service, range of, 945—Services, benefits in the (P.I.), 1339—Treatment allowances in tuberculosis cases (P.I.), 201

Insurance, National Health, in Ireland, 947, 1326
Intensifying screens, 362
International health in 1928 (A.), 1104
Interview, a fictitious (C.) 47
Intestine, small, interpretation of radiograms of (A. E. Barclay) (A.D.), 1322; large, interpretation of radiograms of (A. E. Barclay) (A.D.), 1377; tumours of the, discussion on, 710
Intrathoracic and pulmonary new growths (Maurice Davidson), 1181
Intussusception, case of ileocæcal, with spontaneous reduction (S. M. Power), 329; caused by polypi in a young adult (Donald W. Stuart), 381

IRELAND, CORRESPONDENCE FROM.—Accidents, road, and hospital finance, 1280—Antivaccination and its cost, 792—Appointments in Dublin, 636—Civic Guard and the protection of children, 1111—Dunne, death of Dr. Frank, 1058—Electrotherapeutic clinic in Dublin, 1280—Goitre, mass effect of, 1280—Kildare, health of County, 352—Libel action between medical men, 1058—Mayo, County, dispensary salaries in, 791—Milk Bill, a proposed, 95—Milk, examination of, 524; and meat, control of, 636—National Health Insurance, 947; views of approved societies, 1326—Nursing service in Cavan, conditions, of 636—Registration Council, Irish Free State Medical, 1058—Robert Campbell oration, the, 1058—Royal Academy of Medicine in Ireland, 1058—Royal College of Surgeons in Ireland, appointment to chair of Surgery, 1326; presidency, of, 1111—Thompson, Sir William, memorial to, 524—University College, Dublin, Medical Society of, 1111
Ireland, County medical officers of health in, 587
Iris, sarcoma of the, 1040
Irish Free State, health insurance in the (A.), 182; housing in the (A.), 674; Medical Register of the (A.), 939; Medical Registration Council, 1058
Ironstone and lightning, 694
Irradiated milk (A.), 1103; v. cod-liver oil as a source of vitamin D (K. H. Coward), 1090; (C.), 1220, 1331
Irradiation and health (A), 622; pelvic, in the pregnant woman (A.), 236
Irwin, W. K., Prostatectomy incising clamp (N.I.), 1367
Itching dermatoses, treatment of, 312
Iver, Bucks., refuse nuisance at (P.I.), 102

J

Jail reports from India, 1386
Jamboree, health at the (A.), 396; (C.), 410
James, Clifford, Is childbirth easy among primitive peoples? (C.), 638
James, S. P., on Modern aspects of epidemiology, prevention, and treatment of malaria, 928
Jaundice, association of human and canine (C. J. Montagu Lawrence and C. C. Okell), 327
Jaw-winking phenomenon (A.), 342
Jeanneney, G., Cancer: A Practical Résumé for General Practitioners (R.), 73
Jeans, Frank, on urological statistics as a criterion of progress, 927
Jefferson, Geoffrey, on diagnosis of frontal tumours, 662; on surgery of the spinal cord, 1037
Jellett, Henry, Causes and Prevention of Maternal Mortality (R.), 337; The future of obstetrical practice, 859
Jenner and the Canadian pirate, 1022
Jessel, George, Case of empyema with perforation of bronchus and partial pneumothorax, 1090; Improved trocar and cannula (N.I.), 26
Jews, diseases of the, 51
Joint Tuberculosis Council, meeting of, 1199
Joly, T. Swift, on papilloma of the bladder, 500; Stone and Calculous Disease of the Urinary Organs (R.), 285
Jonas, H. C., on value of health propaganda, 879
Jones, A. Rocyn, The Craft of surgery (C.), 1115
Jones, J. Arnold, on tonsils and adenoids, 335
Jones, Watson, on minor injuries about the elbow-joint, 1257
Jordanburn Psychological Institute, 900

JOURNALS (reviewed).—American Review of Tuberculosis, 128—British Journal of Children's Diseases, 668—Indian Journal of Medical Research, 74—Journal of Industrial Hygiene, 776

Jugoslavian medical visitors, 904
Just, T. H., on diagnosis of acoustic tumours, 1260

K

Kamptodactyly, case of (Alan H. Todd), 1088
Kappis, Max, Organisation und Ordnungsgemässer Betrieb des Operationssaals (R.), 74
Karn, Reginald, A point in certification (C.), 899
Karrenberg, C. L., and Ritter, H., Value of bismuth in the treatment of syphilis, 971
Karsner, H. T., Human Pathology, 2nd ed. (R.), 1314
Katzenstein method of testing the heart, 405
Kay, H. D., on physiological tests of renal function, 823
Keith, Sir Arthur, The fossil man of Peking, 683
Keith, T. S., and Bach, Francis, enlargement of the left auricle of the heart, 766
Kellgren-Cyriax, A., Case of emphysema treated by mechano-therapy, 1360
Kelynack, Dr. T. N., appointed consulting physician at Mount Vernon, 1178
Kempton, Rudolf T., and Little, Malcolm E., Laboratory Manual for Comparative Anatomy (R.), 718
Kendall, Edward C., Thyroxine (R.), 559
Kensington, infant mortality in (A.), 938
Kent, Care of mental defectives in (P.I.), 1015
Kenya, public health in, 312; and Uganda, medical and health services in (P.I.), 1340
Keraphen, 590
Kholy, M. K. el, The mental factor in bronchial asthma, 767
Kidd, Harold Andrew (O.), 154
Kidney, arterio-sclerotic, diagnosis of, 751; a congenital solitary (Albert Sharman), 63; Movable (William Billington), 2nd ed. (R.), 1368; secondarily contracted, diagnosis of, 751
Kienböck's disease, case of: recovery without operation (E. W. Riches), 1189
Kiep, W. H., on Lagrange's operation for glaucoma, 663
Kildare, County, health of, 352
King, health of the (A.), 77, 132, 181, 399
King, J. B., Watson, Chalmers, and Finlay, T. Y., Therapeutic value of irradiated milk in the treatment of rickets, 704
King Edward's Hospital Fund for London, award of grants, 1380
Kinloch, J. Parlane, on maternal mortality, 660
Kistler, Karl, and Portmann, Georges, Les Otites Moyennes (R.), 389
Klages, Ludwig, The science of character (R.), 615
Knee-joint, internal derangements of (Paul Bernard Roth), 325
Knüsel, O., and Vonwiller, P., Vitale Färbungen am menschlichen Auge (R.), 932
Kohn-Speyer, Alice C., Effect of ultra-violet radiation on incidence of tar cancer in mice, 1305
Kolle and Wassermann's Bacteriology, Lief. 18, Bd. V. (R.), 390
Kolmer, J. A., and Schamberg, J. F., Acute Infectious Diseases, 2nd ed. (R.), 827
Konstam, Geoffrey L. S., and Turnbull, Hubert M., Syphilis of the lung with pulmonary arteritis (Ayerza's disease), 756
Kraemer's Scientific and Applied Pharmacognosy, 3rd ed. (R.), 73
Krecke, Albert, Beiträge zur Praktischen Chirurgie (R.), 1199, 1368
Krogh, August, Anatomy and Physiology of Capillaries, 2nd ed. (R.), 931
Kynaston, Col., and the General Medical Council (M.L.), 244; the prosecution of (M.L.), 95

L

Laboratoriums-Methoden der Wiener Kliniken, Die (H. K. Barrenschein und R. Willheim ed.) (R.), 614
Laboratory Procedures, Clinical (George L. Rohdenburg) (R.), 614; Manual of the Massachusetts General Hospital (Roy R. Wheeler and F. T. Hunter), 2nd ed. (R.), 614
Lacey, F. H., on treatment of placenta prævia, 388
Lacrymal apparatus, diseases of, discussion on, 67
Lactic acid, clinical significance of (A.), 239
Lancashire, M.O.H.'s report, 1277
Lancet, The: "At Home," 890; New home of the, 840
Lancet, A, Case of vaccination with meningeal sequelæ, 606
Landmarks and Surface Markings of the Human Body (L. Bathe Rawling), 7th ed. (R.), 1098
Lane, C. Rickwood, and Morson, A. Clifford, Case of sebaceous cyst undergoing malignant changes, 817
Langfeldt, G., En oversikt over den kliniske undersökelse av det viscerale nervesystem (R.), 718
Langmead, F. S., on chronic dyspepsia in children of school age, 384
Lankester, Sir Edwin Ray (A.), 393
Larkum, N. W., Nature of bacteriophage (C.), 951
Laryngeal cancer, diagnosis of (C.), 898, 1011, 1063
Larynx, evolution and purpose of the (A.), 294; tuberculosis of, discussion on, 773
Lawrence, C. J. Montagu, and Okell, C. C., Association of human and canine jaundice, 327

Lawrence, R. D., bread or toast for diabetics, 1305; on retinitis in diabetics, 1038
Layton, T. B., Diagnosis of laryngeal cancer (C.), 1011; on value of radiography in symptomless mastoiditis, 1260
Lead, action of, on chorionic epithelium (A.), 1374
Lead paint, white, use of (P.I.), 200
Lead poisoning as a legacy of gunshot wounds, 844; chronic nephritis and (L.A.), 830; modern treatment of, 901; shipbreaking workers and (P.I.), 1015

LEADING ARTICLES.

Africa and science, 179—Age of marriage and of consent, 618
Bacteriophage and the cure of dysentery 289—Blind, welfare of the, 831—Blindness in India, relief of, 1315; preventable, 75—Blood, purpose of the, 883—British College of Obstetricians and Gynæcologists, 721
Cancer Campaign, the British Empire, 77; statistics, correlation of, 235; susceptibility to, 1149—Cardiac stimulants, 1049—Cardio-aortic syphilis, 393—Carotin, the significance of, 392—Chicago Surgical Congress, 829—Childless marriage, the, 130—Coroner's authority, the 671; discretion, the, 291—Corpora trivialia, 130—Cosmetic surgery, 28—Cremation and public safety, 562—Cures and prevention, 720
Dermatology and general medicine, 391—Diphtheria prophylactic, 29—Drought in the Thames valley, 181—Dysentery in Great Britain, 670
Epilepsy, problems of, 27—Exophthalmic goitre, the place of surgery in, 1314
Fomites, infection by, 1265—Food, the life of, 988—Foot-and-mouth disease, 617
General practice, the renaissance of, 933—Glycogen, insulin, and epinephrine, 179—Good faith and reasonable care, 1371
Harben lectures and vitamin B, 1316—Harveian oration, the, 883—Health organisation, world, 720—Hospital information, Central Bureau of, 1266
Local legislation, public health in, 1048—Lunacy Acts, amendment of the (Board of Control), 1201
Lunacy certification, reasonable care in, 1371
Maternity Service Scheme, a national, 561—Measles, epidemiology of, 290—Medical education in U.S.A., 562—Mental health in 1928, 719—Mentally defective adult, the, 129—Midwives, the training of, 669—Ministry of Health, a year's work in the, 339—Muscular exercise, some effects of, 1203
Nasal sinuses, diagnosis of disease of, 779—Nephritis, chronic, and lead poisoning, 830—Nephrosis, the conception of, 339—Nobel prizemen, the, 989
Œstrin, clinical results with, 1372—Open-air bathing facilities, 507—Orthopædic Congress, the, 75
Pernicious anæmia, the stomach in, 829—Physiology and the medical curriculum, 455—Pneumonia, treatment of 340—Psycho-analysis, the position of, 934—Puerperal sepsis, air-borne infection in, 1371
Radium Commission, 832; problem, the, 1099—Ray Lankester, 393—Referees, medical, reports of, 234—Retina, detachment of, operation for, 1202—Royal College of Surgeons of England: position of members, 1149
Sanocrysin, 76—School-children: what they die of, 1151—Silicosis, mechanism of compensation for, 778—Somnambulism as a defence, 1265—Spine, latent fractures of the, 933—Stomach, cancer of the, 1100—Sugar in the child's diet, 1315—Tannic acid and secondary shock, 987—Tree and the Fruit, the, 1100—Tuberculosis, dietary principles in, 617
Undulant fever in England, 884
Vaccine therapy, the future of, 777—Vaccination, milder, 233—Vaccinia, complications of, 506—Valour, for, 1049—Visceroptosis, significance of, 1047—Vital statistics of 1928, 505—Vitamin B, Harben lectures and, 1316
Water-supply, the law of, 987
Leaflets on treatment of disease (P.I.), 1066
League of Mercy, the, 1326
League of Nations and radium supplies (P.I.), 103; health organisation report (L.A.), 720; International Health Year Book (A.), 1104
Lecture board, "hygienic," 534
Ledingham, J. C. G., and Barratt, Mary M., on the visceral lesions that may accompany experimental vaccinia in rabbits, 515
Leech, E. Bosdin, on Charles Harrison Blackley, 929
Leeds, M.O.H.'s report, 1111; S.M.O.'s report, 406
Lees, David, an diagnostic and other errors in questions of venereal disease, 981
Lees, Kenneth Arthur (O.), 255
Le Fanu, W. R., Nelson's fatal wound (C.), 1392
Leg, paralytic deformities of the, reconstructive surgery in, 87
Legal aspects of medicine and dentistry (A.), 184
Leggett, Bernard, Vital staining of neoplastic tissues (C.), 743
Leicester, M.O.H.'S report, 714
Leicestershire, M.O.H.'s report, 687
Leitch, Archibald, Malignant tumours in fowls (C.), 793; on tumours of the intestine, 710
Leitch, J. Neil, The Use of Standard Treatments in the Campaign against Disease in the Tropics (R.), 932
Leprosy and lepra reaction, Action of ephedrine in relieving certain painful accompaniments of (R. G. Cochrane), 551
Leprous reaction, the (A.), 183
Lettsom's contemporaries, some of (Donald Armour), 855
Leukorrhœa, *see* Cervicitis, chronic
Levinson, Abraham, Cerebro-spinal Fluid in Health and Disease, 3rd ed. (R.), 1147
Levy, Sir Albert, gifts to hospitals by, 82
Lewis, Robert T., Romulus, or The Future of the Child (R.), 534
Lewis's Library, new catalogue of, 158
Leyton, O., on preparations of pituitary substance, 877, 986
Libel action between Irish medical men, 1058
Licensed Victuallers' bed, 1018
Life's endless chain, 734
Light therapy, general, present position of, 901
Lightning, ironstone and, 694
Lincoln, M.O.H.'s report, 1003
Ling, T. M., Bismuth in the treatment of congenital syphilis, 1034
Linitis plastica, 1146
Lipoids, blood, in psychotic patients (A.), 564
Listerine antiseptic germicidal action of (R. and A.R.), 616
Little, Malcolm E., and Kempton, Rudolf T., Laboratory Manual for Comparative Anatomy (R.), 718
Little, E. Graham, Health and conditions of work of medical students, 907 (C.), 1063
Liver, importance of, in chemotherapy (L. Cunningham and M. M. Datnow), 652; (C.), 743; treatment in essential thrombopenia (C.), 1332; in subacute combined degeneration of cord (C.), 794; influence of, on mortality from pernicious anæmia (Peter L. McKinlay), 1086
Liverpool Ambulance Service, 49; M.O.H.'s report, 521; a nursery school in, 259; Port Medical Officer's report, 300; S.M.O.'s report, 522; School of Tropical Medicine award of medals, 745; veterinary research at, 956
Livingston, A., Dental histology (R.), 26
Livingstone, Edward Meakin, and Foote, Edward Milton, Principles and Practice of Minor Surgery, 6th ed. (R.), 775
Lloyd, Eric I., Treatment of cavernous nævi (C.), 1331
Lloyd, N. L., and V. E., on urinary excretion of novarsenobillon in syphilis, and its relation to toxic effects, 1197
Loa loa infections (N. A. Dyce Sharp), 765
Local authorities, representation of medical profession on, 223
Local Government Act (1929), 174, 737; in relation to voluntary hospitals (H. P. Newsholme), 1020; Public health and, 480
Local Government (Scotland) Act (P.I.), 150; Amendment Bill (P.I.), 199
Local government, changes in (A.), 723; officers, superannuation of (P.I.), 1175
Local legislation, public health in (L.A.), 1048
Localisations cérébrales, Revision de la doctrine des (R. Brugia) (R.), 503
Lockhart-Mummery, P., After-treatment of Operations, 5th ed. (R.), 931; on diverticulitis, 384
Lodge, P. M., Elementary Anatomy and Physiology for Nurses (R.), 1264
Loewenberg, Samuel A., Diagnostic methods and Interpretations in Internal Medicine (R.), 776
Lomholt, Svend, on preparations of bismuth in the therapy of syphilis, 982
London area, typhoid in (P.I.), 1015; City of, M.O.H.'s report, 353; clinic and nursing home, laying of foundation-stone, 1167; County Council public health department, appointments to, 185; Greater, the future of, 1180; health of in 1928, 248; health services, directory of (A.), 1318; Hospital Medical College: Liddle prize, 1177, post graduate course, 901, prize-giving, 100, Sunday Fund, 258; hospitals, pay beds in, 143; Irish Medical Golfing Society, 1018; lock hospital, (A.), 185; Medical Exhibition, 745, 894, 949, 983; public cleansing in (P.I.), 1067; Port of, medical officer's report (A.), 1318; School of Hygiene and Tropical Medicine, annual report (A.), 1155, opening of new building, 148, 175, programme of lectures, 890; subways (A.), 1051; voluntary hospitals, 1020
Lorimer, Frank, The Growth of Reason (R.), 178
Love, R. J. McNeill, A simple method of dealing with congenital fistulæ, 122
Lovett, Robert W., and Jones, Sir Robert, Orthopædic Surgery, 2nd ed. (R.), 774
Low, G. Carmichael, on tropical medicine at the turn of last century, 927
Lucas, Geoffrey (O.), 1224
Lumbar puncture, dry (A.), 399
Luminal, therapeutic uses of (W. Russell Brain), 867
Lumsden, Thomas, on restarting the heart-beat (C.), 585; Tumour immunity: treatment by auto-vaccination of implanted mouse carcinoma (M.63), 814
Lunacy acts, amendment of the (L.A.), 1201
Lunatic asylums, married inmates of (P.I.), 1339, 1340
Lunatics as a public danger (A.), 508, 525
Lunatics, pauper, *see* Pauper lunatics
Lung, hydatid disease of, two cases of, 1095; syphilis of, with pulmonary arteritis (Ayerza's disease) (Geoffrey L. S. Konstam and Hubert M. Turnbull), 756
Lungs, radiographic examination of the (C.), 689
Lupus erythematosus, treatment of, by bismuth, 1146
Lynch, Arthur, Cerebral localisation (C.), 585
Lynn, Eldin V., Pharmaceutical Therapeutics with Pharmacology, Posology, and Toxicology (R.), 1200

M

McAlpine, Douglas, Nervous and mental aspects of pernicious anæmia, 643
Macalpine, J. B., on papilloma of the bladder, 499; on physiological tests of renal function, 823
MacArthur, Lt.-Col. W. P., appointed consulting physician to British Army, 1209
MacCallan, A. F., on focal sepsis and diseases of the eye, 385
McCarrison, Robert, Food (R.), 73
McClung, C. E. (ed.), Handbook of Microscopical Technique (R.), 286
McDonagh, J. E. R., Asthma and hay-fever, 271
Macdonald, Ian, Hepatic amœbiasis simulating cholecystitis, 171
McDowall, R. J. S., on pathogenesis and treatment of asthma, 499; and Halliburton, W. D., Handbook of Physiology, 18th ed. (R.), 559
McFadyean, Kenneth, case of lobar pneumonia in a child, 276
McGuigan, Hugh Alister, Text-book of Pharmacology and Therapeutics (R.), 667
McIlroy, Louise, on the training of midwives, 1092
McKendree, Charles A., Neurological Examination (R.), 503

MacKenna, R. M. B., Aids to Dermatology and Venereal Diseases (R.), 1045; on treatment of lupus erythematosus by bismuth, 1146
McKenzie, Dan, on nasal catarrh in children, 772
Mackenzie, J. Ross, Ætiology and prophylaxis of post-anæsthetic sickness, 1299.
Mackenzie, Tait, A sculptor of youth (A.), 1377
McKinlay, Peter L., Influence of liver treatment on mortality from pernicious anæmia, 1086
Maclagan, N. F., Oxidation-reduction potential, 787
McLaughlin, A. I. Granville, and Dix-Perkin, A. J., Observations on the bruit d'airain, 1351; Pneumothorax induction trocar and cannula (N.I.), 552
Maclaughlin, Thomas F., A study in encephalitis, 599
Macleod, Donald, Note on pain in relation to duodenal ulcer, 1358
Macleod, J. J. R., Physiology of glycogen and the rôle of insulin and epinephrine in carbohydrate metabolism, 1, 55, 107
McLeod, J. W., and Sugare, H., Bacteriological diagnosis of whooping-cough, 165
MacNalty, A. Salusbury, A Book of Crimes (R.), 882; "Epidemic hiccup," 62
McNeil, Charles, on tuberculosis in early childhood, 608
McQueen, James M., Contractility of capillaries (C.), 1221
McWatters, R. C., Spontaneous reduction in volvulus of bowel, 496
Maculo-calcarine reflex, the, 820
Madness in Shakesperian Tragedy (H. Somerville) (R.), 232
Magician and Leech (Warren R. Dawson) (R.), 1344
Malaria and venereal disease, balance between (A.), 726; Congress, Second International, 1169; in Bengal (P.I.), 1233; Letters from Rome on Certain Discoveries connected with (T. Edmonston Charles: Sir Ronald Ross, ed.) (R.), 666; modern aspects of epidemiology, prevention and treatment of, 928; problems and their solution, Assam's (G. C. Ramsay), 1356; yellow fever and (P.I.), 1175
Malarial therapy of general paralysis of the insane (C.), 1171; results of, 402
Malignant growth, resistance to (Trevor Heaton), 762; tumours, blastogenic principle in fowl sarcoma and its significance in the theory of the origin of (Ernst Fränkel), 538; in fowls (C.), 793, 848, 899
Malta fever, contagious abortion and (P.I.), 307
Manassch, Antonius Joseph (O.), 1016
Manby, Edward Petronell (O.), 691
Manchester, cremation in, 1123; M.O.H.'s report, 1328; new cancer hospital for, 92; new pharmacological laboratories in (A.), 135; students' rag, 1235; welfare centres, 693
Mandibular cartilage, displaced, causation and treatment of (Cecil P. G. Wakeley), 543; (C.), 689
Mann, Elsie, on radiological diagnosis of mastoid disease, 1260
Mann, Ida, on the vascularisation of the vertebrate eye, 68
Manson-Bahr, Philip, Mechanism of filarial periodicity (C.), 45; and Tait, C. B. V., Symptomatology of intestinal amœbiasis, 1028
Maranon, Gregorio, The Critical Age (R.), 502
Marat, Jean Paul, 533
Margate, S.M.O.'s report, 407
Markey, John F., Symbolic Process: Its Integration in Children (R.), 1148
Marlin, Thomas, The "Asuero" treatment (C.), 638
Marrack, John R., Significance of the acid base balance in the blood (A.D.), 512, 569
Marriage and of consent, the age of (L.A.), 618; (C.), 689; the childless (L.A.), 130; The Hygiene of (Isabel Emslie Hutton), 2nd ed. (R.), 177; Ideal (Th. H. Van de Velde) (R.), 177
Marshall, A. L., Snake-bite in England (C.), 850
Martin, E. G., and Weymouth, F. W., Elements of Physiology (R.), 826
Martindale and Westcott's Extra Pharmacopœia, 19th ed. (R.), 930
Massey, Arthur, Report on outbreak of sickness due to contaminated milk, 996
Mastoid disease, radiological diagnosis of, 1260; operation, history of the, 979; note on hæmostasis in the (N. Asherson), 1359
Mastoiditis, acute, case of, 1096; symptomless, value of radiography in, 1260
Materia Medica (Henry G. Greenish), 5th ed. (R.), 828
Maternal death-rate, contribution to the study of the (G. F. Gibberd), 535
Maternal morbidity, discussion on, 70; Mortality, Causes and Prevention of (Henry Jellett) (R.), 337; discussion on, 660; inquiry, 196, 525; in London in 1928, 248; public opinion and, 962
Maternity and Child Welfare Conference (A.), 34; proceedings at, 69; grants (P.I.), 1068
Maternity Convention, League (P.I.), 201; institutions, 358; nursing, 70; service, a national, discussion on, at B.M.A. meeting, 195; (L.A.), 561
Mayer, Martin, Exotische Krankheiten, 2nd ed. (R.), 127
Mayneord, W. V., The Physics of X Ray Therapy (R.), 126
Mayo, C. H., on abdominal pain, 226
Mayo, William J., on diverticulitis, 383
Mead, Sterling V., Diseases of the Mouth, 3rd ed. (R.), 985
Measles, Epidemiology of (L.A.), 290; in London (A.), 564
Measles, German, case of meningo-encephalitis following (J. H. E. Brock), 1190
Meat diet, effect of a (A.), 238
Meath, Lord, death of, 853
Mecca pilgrimage of 1929, the, 1237
Mechanical man, 962
Médecine, Qu'est ce que la (E. Rist) (R.), 232
Medical defence (A.), 722; diary, 50, 101, 155, 205, 259, 310, 360, 640, 693, 746, 798, 853, 905, 959, 1018, 1070, 1123, 1178, 1235, 1291, 1342, 1397; Directory, the (C.), 199; (A.), 1321; education (C.), 357; in U.S.A. (L.A.), 562; Golfing Society, 858; Insurance Agency, annual general meeting, 897; laureate, our (A.), 994; missions, 802; museum, a medical (A.), 33; news, 48, 99, 154, 203, 257, 308, 358, 412, 481, 531, 589, 640, 692, 744, 797, 852, 904, 957, 1017, 1069, 1122, 1177, 1235, 1289, 1341, 1397; officers of health in Ireland, county, 587, reports, 96, 144, 300, 353, 520, 577, 686, 713, 846, 1002, 1111, 1277, 1328, 1386; practice, by foreigners in Great Britain and Ireland (A.), 1206, Lord Dawson on the future of, 85; practitioners and motorists, 85, public health service, 222; profession and the Minister of Health (A.), 184; Register: election of direct representatives (C.), 1062, untraceable practitioners in 1929, 685, of the Irish Free State (A.), 939; Research Council: and good English (A.), 1320, appointments (A.), 345, special reports and publications: Adaptation of the eye: its relation to the critical frequency of flicker (A.), 294; to dark (A.), 344—Binocular vision, studies on, 479—Catgut, surgical, 946—endowment for Dorothy Temple Cross Research Fellowship, 481—Radium, medical uses of, 1216 — Scarlet fever, diphtheria and enteric fever, 1915–24 (A.), 510—System of Bacteriology in Relation to Medicine, 359; Vol. 3 (R.), 665, Vol. 4 (R.), 1313—Tannic acid treatment of burns, 955—"Vaccinia variola" flocculation test, diagnostic value of, 992—Vision, peripheral, some experiments on (A.), 723; research in India (P.I.), 102; schools, opening of the, 624, addresses at the, 731; science in the fifteenth century (A.), 939; service, rural, in America, 1299, within the range of (A.), 80; Sickness, Accident and Life Assurance Society, Ltd. (C.), 744, 952, 1012, 1115, 1116, annual meeting, 798; societies: their origin and value, 731; students, health and conditions of work of (E. Graham Little), 907 (C.), 951, 1063; titles (M.L.), 351; tour in Czecho-Slovakia, 205; Women's Federation, meeting of Council, 1044
Medicine and dentistry, legal aspects of (A.), 184

MEDICINE AND THE LAW.—Appeal, doctor's successful: alleged partnership document, 1325—Bell, acquittal of Dr., 95—Christian Science Home, suicide at a: jury's censure, 1325—Coroner's inquest and police proceedings, 946—Croydon inquests: action by the High Court, 94—Dangerous Drugs Acts: doctors fined under the, 841; Drugs Regulations: keeping a register, 351—Dragging the truth out of suspects, 575—Evidence, liability to give, 403—Kynaston, Col., and the General Medical Council, 244; prosecution of, 95; result of appeal, 351—Lunatics, criminal, at large, 1055—Murder, the law of: confession without corpse, 792—Osteopathic treatment censured at inquest, 1217—Prescription, falsification of, by drug addict, 351—Rat poison, a dangerous, 792—Shewry *v.* Maybury, 190—Titles, medical, 351

Medicine in wartime, 54; An Introduction to the History of (Fielding H. Garrison), 4th ed. (R.), 717; its Contribution to Civilisation (E. B. Vedder) (R.), 717; Recent Advances in (G. E. Beaumont and E. C. Dodds), 5th ed. (R.), 1098
Medico-legal expert in France, 22; Problems (Lord Riddell) (A.), 137
Meinicke micro-reaction (G. de M. Rudolf), 170
Melanoma, malignant, prognosis in (Humphrey H. Gleave), 658
Melland, Brian (O.), 1118
Meller, Joseph, on diseases of the lacrymal apparatus, 67
Melville, Stanley, on tuberculosis in early childhood, 609; and Burrell, L. S. T., radiographic examination of the lungs (C.), 689
Memorials to: Hambleden, the late Lord, 101—Thompson, the late Sir William 524—Thomson, Dr. John (A.), 1376—Widal, Fernand (A.), 346
Meningitis, gonococcal, 1166
Meningococcal septicæmia, subacute, clinical picture produced by (C. Lawson Stote), 701
Meningoencephalitis following German measles, case of (J. H. E. Brock), 1190
Mental Colony, Glasgow, 844; defectives and the public safety (A.), 508, 525; in Kent (P.I.), 1015; institutions for (P.I.), 1340; institutions for, reports of: Colchester: Royal Eastern Counties Institution for the Mentally Defective, 581; numbers and cost of, in England and Wales (P.I.), 201, 1233; Deficiency (Amentia) (A. F. Tredgold), 5th ed. (R.), 503; aesthetics and (A), 511; deficients, sterilisation of (P.I.), 203; disorder, some cases of, 254; Handicaps in Literature (E. M. Cox) (R.), 53; health in 1928 (L.A.), 719; hospital assessment, a, 1218; attendants, hours worked by (P.I.), 153; the ideal, 1279
Mental Hospital Reports: Aberdeen Royal Mental Hospital, 250—Birmingham City Mental Hospital, 716—Brighton County Borough Mental Hospital at Hayward's Heath, 524—Cardiff: City of Cardiff Mental Hospital, 523—Carmarthen, Cardigan and Pembroke Joint Counties Mental Hospital at Carmarthen, 581—Cumberland and Westmorland Mental Hospital, 580—Devon Mental Hospital, 688—Dorset Mental Hospital, 1004—Down County Mental Hospital at Downpatrick, 581—Essex and Colchester Mental Hospitals at Brentwood and Severalls, 580—Glamorgan County Mental Hospital at Bridgend, 581—Glasgow Royal Asylum, 250—Gloucester: Barnwood House Hospital for Mental and Nervous Disorders, 715—Hertfordshire County Mental Hospital at Hill End, St. Albans, 580—Inverness District Asylum, 1173—Kent County Mental Hospitals at Maidstone and Canterbury, 715—Lancashire and Cheshire Society for the Permanent Care of the Feeble-Minded, 1173—Leicester, City of: Mental Hospital at West Humberstone, 1005—Monmouthshire Mental Hospital at Abergavenny, 580—Perth, James Murray's Royal Asylum, 523—Roxburgh, Berwick and Selkirk District Asylum, 688—Royal Edinburgh Asylum, Morningside, 249—Rubery Hill and Hollymoor Mental Hospital, 1006—Staffordshire Mental Hospitals at Stafford, Burntwood, and Cheddleton, 1005—West Riding Mental Hospital at Storthes Hall, Kirkburton, 1172, at Wakefield, 1172—West Sussex County Mental Hospital (Graylingwell, Chichester), 524—Wilts County Mental Hospital, 1173—Winson Green Mental Hospital, 1005—Worcester: County and City of Worcester Mental Hospital at Powick, 524—York, The Retreat, 523

Mental Hospitals Association: annual meeting, 189; Dutch (A.), 936; private (P.I.), 200; public, scientific and research work at: report of Board of Control, 1008; unqualified nurses in (P.I.), 201
Mental hygiene, conference on, 998; discussion on, 172; place of, in social and public health work, 999
Mental patients, *Bacillus acidophilus* in, 1093; Mental Treatment Bill (P.I.), 1225, 1335, 1394
Mentally defective adult, the (L.A.), 129; the question of sterilisation: committee's report, 142
Mentally deficient children, education of (P.I.), 153
Menzies, F. N. K., on the Local Government Act of 1929, 737
Merrill, H. G., and Oaks, L. W., Your Nose, Throat and Ears: Their Care and Health (R.), 1045
Merseyside Hospital Council, 1123
Metadysentery: with remarks on a chronic type (Sir Aldo Castellani), 370
Metals, heavy, minimal doses of (A.), 508
Metcalfe, G. A., Ether inhaler (N.I.), 288
Methyl chloride in refrigerators (P.I.), 202
Methylated spirits and impure forms of alcohol, toxic effects of, discussion on, 124
Metropolitan Asylums Board, annual report (A.), 236; appointment of bacteriologist, 205; lectures and demonstrations, 309
Metropolitan District Nursing Association, 531
Microscopical Technique, Handbook of (C. E. McClung ed.) (R.), 286
Middlesex Hospital, opening address at, 734
Middleton, E. L., on the present position of silicosis in Britain, 282
Midwifery, gas and oxygen in, 558
Midwifery and Gynæcology, Synopsis of (Aleck W. Bourne), 4th ed. (R.), 389
Midwives, the training of (L.A.), 669, 858; Ministry of Health report, 680, discussion on, 1091
Military Medicine and Pharmacy, Congress of, at Warsaw, 54
Milk and meat, control of, in Ireland, 636; bill for Ireland, a proposed, 95; clean, 106; contaminated, outbreak of sickness due to (Arthur Massey), 996; examination of, 524; graded, price of licences for (P.I.), 1233; grading of (P.I.), 102; irradiated (A.), 1103, *and see* Irradiated milk; prices, high, Government and (P.I.), 1016; production, the physiology of (A.), 675; service in schools (P.I.), 1288; supply of, at maternity centres (P.I.), 1067
Miller, Alexander Gordon (O.), 299
Miller, A. H., Medical education (C.), 357
Miller, Emanuel, on the difficult child, 1262
Miller, Reginald, Clinics for rheumatic children (C.), 1282
Miller, Surg. Capt. Richard (O.), 626
Miller, S. C., and Sorrin, Sidney, The Practice of Periodontia (R.), 127
Milligan, E. T. C., on anæsthesia in rectal surgery, 1259
Milligan, Sir William (O.), 1393
Milne, Robert, on pain in the fore part of the foot, 902
Mind, The Health of the (J. R. Rees) (R.), 615
Minimal doses of heavy metals (A.), 508
Minister of Health, the medical profession and the (A.), 184
Ministry of Health, annual report (L.A.), 339; 480, 572, 631—appointments, 49 100 309, 745—Report on infant mortality (A.), 393; on training and employment of midwives, 680—staff of (P.I.), 1014
Mitchell, Alexander, on operative treatment of tuberculosis of larger joints, 712
Mitchell, H. H., and Hamilton, T. S., Biochemistry of the Amino-Acids (R.), 559
Mitral stenosis, crescendo murmur of (A.), 78
Modi, J. P., Elements of Hygiene and Public Health, 3rd ed. (R.), 1200
Moinson, Louis, Immunité et Vaccinothérapie (R.), 1096
Mollison, W. M., on the drug treatment of spasmodic rhinorrhœa, 612; on the history of the mastoid operation, 979
Moncrieff, Alan, Epidemic (lethargic) encephalitis in a very young infant, 496; and Poynton, F. John, Subcutaneous nodules in the scalp in fatal cases of glandular enlargement, 812
Monogamy, the future of, 802
Montague, J. F., Treatment of hæmorrhoids (C.), 410
Moodie, W., on the difficult child, 1262
Moore, Thomas, Colorimetric estimation of vitamin A, 219; Relation of carotin to vitamin A, 380
Moorfields Eye Hospital (A.), 888
Morbidity, the study of, 845
Morley, John, on abdominal pain, 226; Significance of afferent impulses from the skin in the mechanism of abdominal pain, 1240
Morlock, H. V., Development of pulmonary tuberculosis, with special reference to "early infiltration," 60
Morse, John Lovett and others, The Infant and Young Child, 2nd ed. (R.), 1370
Morson, A. Clifford, Implanted radium seeds (C.), 146; and Lane, C. Rickwood, Case of sebaceous cyst undergoing malignant changes, 817
Morton, Charles Alexander (O.), 568, 637
Morton, W. Cuthbert, New method of making a permanent suprapubic opening, 170
Mother and her Baby, the Expectant (Bodh Raj Chopra) (R.), 667
Mothercraft, 1074
Motor accidents in Edinburgh, 853; discussion on, at B.M.A. meeting, 194; hospitals and (P.I.), 307, 531, 786, 956, 962, 1035, 1395; Show, Olympia (1929), 895; van, an anti-tuberculosis, 1073
Motoring and excessive noise regulations, 205
Motorist, the doctor and the (A.), 1104; discussion on, 1094
Motorists and third-party insurance (P.I.), 1066; hospitals and, 50; (P.I.), 307, 531, 786, 956, 962, 1035, 1290; medical practitioners and, 85
Mottram, J. C., and Cramer, W., Brown *v.* white bread controversy (C.), 1012; Effect of X rays on blood platelets (C.), 586
Mottram, V. H., Loss of appetite in childhood (C.), 98; and Hartwell, Gladys A., The brown *v.* white bread controversy, 892 (C.), 953, 1012
Moullin, C. Mansell, The scope of cancer inquiry (C.), 197
Mount Vernon Hospital, Northwood: a new scheme for investigating malignant disease, 1056
Mouse carcinoma, treatment by autovaccination of (Thomas Lumsden), 814
Mouth, Diseases of the (Sterling V. Mead), 3rd ed. (R.), 985
Movement, perception of (A.), 723
Muir, Joseph, Radium treatment by the implantation of screened seeds, 7
Mummery, J. Howard, bust of, given to North-Western University, Chicago, 158
Murden, Percy G., Case of facial neuralgia due to a hidden root, 607
Murphy oration (D. P. D. Wilkie), 803
Murray, J. A., Chromosome imbalance theory of carcinogenesis, 297
Muscle, excitability of: Handbuch der Biologischen Arbeitsmethoden, Abt. V., Teil 5a, Heft 5 (R.), 73
Muscular exercise, some effects of (L.A.), 1203
Museum, medical, a model (A.), 33
Muskens, J. J. L., on myoclonic and traumatic epilepsy, 554; problems of epilepsy (C.), 849
Mussel poisoning, 962
Mustard gas, Red Cross and, 797
Mutilating operations (P.I.), 1338; (C.), 1391

N

Nabarro, David, White, P. Bruce, Dyke, S. C., and Scott, W. M., Two cases of human infection by the American hog-cholera bacillus, 868
Nævi, cavernous, a simple method of treating (G. B. Dowling), 1251; (C.), 1331
Nageischmidt, Franz, on the prevention and healing of tuberculosis by turtle-vaccine therapy, 36
Narcotic drugs for medical purposes (P.I.), 1176
Nasal catarrh in children, persistent, discussion on, 772; cavities, cerebral infection from the (A.), 990; sinuses, diagnosis of disease of (L.A.), 779
National Association for the Prevention of Tuberculosis, annual meeting, 258; Baby Week Council, 1180; Council for Mental Hygiene: Conference, 798; Institute for the Deaf, annual meeting, 141; Radium Trust (P.I.), 251; (A.), 346, appointments, 296, 958; Society for Prevention of Cruelty to Children, annual report, 534; Veterinary Medical Association: annual meeting, 574
Nauheim Spa, gift of £225,000 to (A.), 676
Naval Hygiene (Thomas B. Shaw) (R.), 1097; Medical Compassionate Fund, 205; personnel, vaccination of (P.I.), 1065
Navy, health of the (A.), 80; rheumatic diseases and pulmonary tuberculosis in the (P.I.), 1065
Nelson's fatal wound, (C.), 1392
Neolithic period, stimulus given by religion to surgery during, 929
Neoplastic tissues, vital staining of (C.), 743
Neosalvarsan as a pulmonary antiseptic (A.), 32
Nephritis, On (A. Cecil Alport) (R.), 1368
Nephritis, renal extracts in the treatment of (A.), 293
Nephrosis, the conception of (L.A.), 339
Nervous and Mental Diseases for Nurses (Irving J. Sands) (R.), 286; Child, The (H. C. Cameron), 4th ed. (R.), 986; disorders, penal treatment for (C.), 527; system, intrathecal treatment of parasyphilitic affections of (Theodore Brunner), 117; System, Introduction to the Study of the (E. E. Hewer and G. M. Sandes) (R.), 1147; System, Visceral: En oversikt over den kliniske undersökelse av det viscerale nervesystem (G. Langfeldt) (R.), 718
Nervus spinosus, surgical significance of the (E. Carew-Shaw), 382
Neuralgia, facial, due to a hidden root (Percy G. Murden), 607
Neurasthenia, note on the treatment of (A. W. Hendry), 1249; tropical, genesis of (A.), 344
Neurological Examination (Charles A. McKendree) (R.), 503
Neurology, Clinical, Text-book of (M. Neustaedter) (R.), 503
Neustaedter, M., Text-book of Clinical Neurology (R.), 503
New Hebrides, Man and Animals in the (J. R. Baker) (R.), 1148

NEW INVENTIONS.—Appendix shield (A. Ernest Sawday), 128—Artery forceps, improved (Hugh Donovan), 172—Clamp, bone-retaining (Alan H. Todd), 67—Ether inhaler (G. A. Metcalfe), 288—Hæmorrhoids, syringe and needle for the injection of (W. B. Gabriel), 1367—Pneumothorax induction trocar and cannula (A. J. Dix-Perkin and A. I. Granville McLaughlin), 552—Prostatectomy incising clamp (W. K. Irwin), 1367—Radium-needle introducer (Douglas A. Crow), 1366—Skin-forceps (A. W. Holthusen), 288—Sutures, surface (Henry de P. B. Veale), 501—Trocar and cannula, improved (George Jessel), 26—Urine, examination of, labour saver in the (G. Ramsey Phillips), 172—Vaginoscope, the (Edward Baron), 1046—Vasotomy syringe (J. F. Peart), 613

NEW PREPARATIONS.—Arcolax (Roberts and Co.), 158—Bakolyse (Anglo-French Drug Co.), 158—Digipan (Coates and Cooper), 158—Genozo Tooth Paste (Genatosan, Ltd.), 158 — Oleocal: Dragees and Granulate (Wilcox Jozeau and Co.), 158—Plasmona (Plasmon, Ltd.), 158—Siccopan (Coates and Cooper), 158

New York, Collected Studies from Public Health Laboratories of, Vol. X. (1920-26) (R.), 504; International Medical Club of, 358
Newcastle-upon-Tyne, M.O.H.'s report, 1329; Nurses' Home at, 1122; paying beds at, 156
Newsholme, H. P., Local Government Act in relation to voluntary hospitals, 1020
Nicholls, Lucius, Malignant growth and pellagra (C.), 1333
Nightingale, H. J., and Wilson, G. S., Isolation of *Brucella abortus* from a case of undulant fever, 1143
Nirvanol, treatment of chorea by (F. John Poynton and Bernard Schlesinger), 267

Nitrate poisoning: an epitaph, 362
Nitric acid fumes, poisoning with, 1218
Nitrous oxide anæsthesia, electrocardiographic study of heart during and after (G. E. S. Ward and Samson Wright), 1184
Nobel, E., Pirquet, C., and Wagner, R., Nutrition of Healthy and Sick Infants and Children, 2nd ed. (R.), 1147
Nobel prizemen, the (L.A.), 989; 1053
Nodules, subcutaneous, in scalp, 812; and *see under* Scalp
Noise (A.), 619; motoring and excessive, regulations regarding, 205; nuisance, discussion on, at B.M.A. meeting, 195
Noises, street, and public health, (P.I.), 201
Non-paying patient a (C.), 858
Noorden, Prof., new clinic for, 740
Norfolk, M.O.H.'s report, 687
North Persian Forces Memorial Medal, award of, 640
Northampton, M.O.H.'s report, 847
Northamptonshire, M.O.H.'s report, 687
Nose and throat cases, children's ward for, at Edinburgh, 1008; Throat and Ear and their Diseases (ed. Chevalier Jackson and G. M. Coates) (R.), 502; Throat and Ears, Your: Their Care and Health (L. W. Oaks and H. G. Merrill) (R.), 1045
Nottingham, hospital costs at, 1070; M.O.H.'s report, 715; new hospital at, 1070; S.M.O.'s report, 522; University ward at, 1142
Nottinghamshire, S.M.O.'s report, 580
Novarsenobillon, urinary excretion of in syphilis, and its relation to toxic effects, 1197
Nursing Association, Metropolitan District, 531; Association, Overseas, annual report, 382
Nursery school in Liverpool, 259
Nursery schools (P.I.), 152, 1014, 1067, 1396
Nurses' Home, a memorial, 309
Nurse's salary during illness, 802
Nursing, Eye, Ear, Nose and Throat (Abby-Helen Denison) (R.), 1044; maternity, 70; Tropical (A. L. Gregg) (R.), 74
Nutrition of Healthy and Sick Infants and Children (E. Nobel, C. Pirquet, and R. Wagner), 2nd ed. (R.), 1147
Nystagmus, the quick phase of, 819

O

Oaks, L. W., and Merrill, H. G., Your Nose, Throat and Ears: Their Care and Health (R.), 1045

OBITUARY.

Ball, Laurence, *M.C.*, M.D., F.R.C.P. Lond., 1170—Belilios, Raphael, M.D., F.R.C.S. Edin., 530 — Bevan-Lewis, William, M.Sc.Leeds, M.R.C.S., L.S.A., 954—Bott, Stanley, M.R.C.S.Eng., M.D.Durh., 308—Brown, John, M.D. Manch., D.P.H., 256—Bruce, John Mitchell, C.V.O., M.D., F.R.C.P. Lond., LL.D.Aberd., 97—Buckley, Thomas William, M.D. Durh., M.R.C.S.Eng., 530
Caiger, Frederick Foord, M.D., F.R.C.P. Lond., D.P.H., 583—Campbell, Sir John, M.D., M.Ch., LL.D. R.U.I., F.R.C.S.Eng., 584—Cockburn, Sir John Alexander, K.C.M.G., M.D. Lond. and Adel., M.R.C.S.Eng., 1223—Croft, Edward Octavius, M.D. Durh., L.R.C.P.Lond., M.R.C.S.Eng., 358 — Curgenven, John Sadler, M.R.C.S., L.S.A., 1334
Davies, Arthur Mercer, M.R.C.S., L.S.A., D.P.H.Camb., 1224—Davies, Arthur Templer, M.D.Camb., F.R.C.P.Lond., 1223—Dewar, Thomas Finlayson, C.B., M.D.Aberd., D.Sc.Edin., 1285—Dunne, Frank, M.B.R.U.I., 1058
Evans, Daniel Martin Baden, M.B., M.R.C.P.Lond., F.R.C.S.Eng., 1119—Ewart, William, M.D. Camb., F.R.C.P.Lond., 408
Falkiner, Ninian McIntyre, M.D.Dub., F.R.C.P.Irel., 1016
Gairdner, Matthew William, L.R.C.S. Edin, 1119—Glynn, Ernest Edward, M.D.Camb., F.R.C.P., 741—Gordon, Thomas Eagleson, M.B., B.Ch., 255—Gordon, William, M.D.Camb., F.R.C.P.Lond., 795—Graham, Surg. Lt.-Comdr. Gilbert Malise, 1234
Henderson, Edward Erskine, M.B. Camb., F.R.C.S. Eng., 530—Henderson, George, Lt.-Col., late I.M.S., M.D. Aberd., L.R.C.S.E., 34 — Hose, Charles, 1106
Kidd, Harold Andrew, C.B.E., M.R.C.S. Eng., 154
Lankester, Sir Edwin Ray, 393—Lecène Prof. Paul, 1110—Lees, Kenneth Arthur, O.B.E., M.B., B.Chir.Camb., F.R.C.S.Eng., 255—Lucas, Geoffrey, B.A.Camb., M.D.Durh., L.S.A., 1224
Manasseh, Antonius Joseph, B.Sc. Leeds, M.R.C.S.Eng., 1016—Manby, Edward Petronell, M.D., D.P.H. Camb., 691—Melland, Brian, M.D. Lond., M.Sc. Manch., 1118—Miller, Alexander Gordon, 299 — Miller, Richard, Surg.-Capt., R.N., 626—Milligan, Sir William, M.D., LL.D. Aberd., 1393 — Morton, Charles Alexander, O.B.E., F.R.C.S.Eng., 637
Openshaw, Thomas, C.B., C.M.G., 1117
Pearson, Surg.-Comdr. Devonshire Penrose Hawkes, 242—Perkin, Prof. W. H., 674—Peterkin, Alfred, Col., C.B., A.M.S., ret., 355—Powell, Walter Erichsen (Eric), M.R.C.S. Eng., 585—Purser, John Mallet, M.D., D.Sc.Dub., F.R.C.P.Irel., 691
Reid, Sir Archdall, K.B.E., M.B., C.M.Edin., F.R.S.E., 1117—Rideal, Dr. Samuel, 1156—Riddell, John Scott, M.V.O., O.B.E., M.B., LL.D. Aberd., 1284—Ross, James Gillon, M.B.Edin., 1285—Ross, Philip Hedgeland, M.R.C.S.Eng., D.P.H.Camb., 1284
Sharkey, Sir Seymour, D.M.Oxf., F.R.C.P.Lond., 582—Shaw, Frank Herbert, M.R.C.S.Eng., 1119—Slinger, Robert Townley, M.B.Manch., F.R.C.S.Eng., 640 — Sloggett, Sir Arthur, K.C.M.G., K.C.V.O., F.R.C.S. Eng., 1222
Thomas, Daniel Lewis, M.R.C.S.Eng., D.P.H., 1334—Tuffier, Sir Théodore, 993
Verrall, Sir Thomas Jenner, M.R.C.S. Eng., LL.D., Aberd., 795
Whiteford, Charles Hamilton, M.R.C.S. Eng., 1118—Woollatt, Percy Charles, F.R.C.S.Edin., M.D.Brux., 585—Wright, James Douglas, Dr., 409

O'Brien, R. A., Interpretation of the Dick and Schultz-Charlton tests (A.D.), 296; Interpretation of the Schick test (A.D.), 241
Obstetrical practice, the future of (Henry Jellett), 859
Obstetrics, modern, surgical tendencies of, 500
Obstruction, acute, anaerobic toxæmia in (A.), 724; (C.), 849
Occlusion, traumatic (A.), 1208
Ocular movements, dissociation of, 819
Oculo-gyric crises, 820
Odontomes, compound composite (A.), 81
Œsophagus, case of cicatricial stenosis of the (Kenneth Heritage), 708; case of congenital atresic abnormality of (T. V. Cooper), 607; case of extrinsic stricture of, 1043
Œstrin, clinical results with (L.A.), 1372
Ogden, C. K., The A B C of Psychology (R.), 615
Ogilvie, W. H., on minor injuries about the elbow-joint, 1256; Recent Advances in Surgery, 2nd ed. (R.), 827
O'Gorman, Mervyn, on the doctor and the motorist, 1094
Okell, C. C., and Lawrence, C. J. Montagu, Association of human and canine jaundice, 327
Oldham, J. Bagot, Continuous artificial respiration with maintenance of circulation for twelve hours after apparent death, 497; Implantation of epithelioma in alveoli of maxilla from primary growth in tongue, 873
Oleocal (N.P.), 158
Open-air bathing facilities (L.A.), 507
Openshaw, Thomas (O.), 1117
Operating table lamp, an ideal (A.), 1377; Theatre: Organisation und Ordnungsgemässer Betrieb des Operationssaals (Max Kappis) (R.), 74
Ophthalmological Congress, Oxford, proceedings, 67
Ophthalmology, Congress at Oxford, proceedings, 67; for the layman, 533; International Congress at Amsterdam (A.), 82, 399, 507, proceedings of, 633; Recent Advances in (W. Stewart Duke-Elder), 2nd ed. (R.), 25; ultra-violet rays in, 414
Ophthalmoscopic signs in heart disease (A.), 397
Opium in India (P.I.), 203; revenue in British Empire (P.I.), 1121
Optochin in ophthalmology (A.), 293
Optometer, the Busch, 1180
Orbital abscess following removal of tonsils and adenoids (G. Norman Clark), 978
Organhormone und Organtherapie (August Bier and others) (R.), 775
Oriel, G. H., on pathogenesis and treatment of asthma, 499
Orr, Winnett, on "no dressing" treatment of infections of bones and joints, 88; Osteomyelitis and Compound Fractures and Other Infected Wounds (R.), 716
Orthopædic Associations, British and American, joint meeting of (L.A.), 75; proceedings at, 86; hospital near Mansfield, a new, 312; hospitals, 1234
Orton, G. H., on radiological diagnosis of gastric diseases, 1042
Osler Club, meeting of the, 138
Osler, Sir William: Bibliotheca Osleriana (R.), 25
Osman, A. Arnold, Asthma in children: value of sugar in prevention and treatment, 1187
Osmond, T. E., Interpretation of Wassermann reaction in adults (A.D.), 624, 677
Osteo-arthritis of the hip, chordotomy in the treatment of (A. S. Blundell Bankart), 378; (C.), 527, 528
Osteomyelitis and Compound Fractures, and Other Infected Wounds (H. Winnett Orr) (R.), 716
Osteopathic treatment censured at inquest (M.L.), 1217
Otites Moyennes, Les (Georges Portmann and Karl Kistler) (R.), 389
Otosclerosis: A Résumé of the Literature (R.), 717
Oudard, P., and others, Le diagnostic dans les affections de la colonne vertébrale chez les adultes (R.), 1098
Out-patient departments, waiting at (A.), 79
Ovarian grafts (A.), 1268
Ovary, recent work on the hormones of the, 1108; Internal Secretions of the (A. S. Parkes) (R.), 1367
Overcrowding, decrease in (P.I.), 1232
Ovulation in human beings, 1108
Oxidation-reduction potential (N. F. Maclagan), 787
Oxley, W. H. F., on maternal mortality, 661

P

Page, C. Max, and Bristow, W. Rowley, Treatment of Fractures and Dislocations in General Practice, 3rd ed. (R.), 881
Paisley, M.O.H.'s report, 847
Pandya, D. D., and Dunn, C. L., Chemistry and Bacteriology of Public Health (R.), 1369
Panel Conference, the, 942
Papworth Village Settlement for Consumptives, visit of Duke and Duchess of York, 250
Paraffinoma of rectum, 500
Paramore, R. H., anaerobic toxæmia in acute obstruction (C.), 849
Parasyphilitic affections of the nervous system, intrathecal treatment of (Theodore Brunner), 117
Pardee, Harold, E. B., What You Should Know About Heart Disease (R.), 231

PARIS, CORRESPONDENCE FROM.—Clemenceau, 1166; medical life of, 1218—Diploma of major surgery, 1218—Euthanasia and morphia, 1111—Lecène, death of Prof. Paul, 1110—Libel action, a, 1327—Marseilles, new faculty of medicine at, 1327—News items, 1166, 1218, 1327—Social insurance law, 1327—Tuffier and the chair of surgery, 1110—X rays and neighbourliness, 1166

Parkes, A. S., Internal Secretions of the Ovary (R.), 1367
Parliament, representation of the medical profession in, 223

PARLIAMENTARY INTELLIGENCE.
Accidents in mines, 1064; road, stationary cars and, 1066—Address, debate on the, 101—Additional medical benefit, approved societies and, 1175—Adoption of children in Scotland, 103—Aircraft pilots, public, health of, 1232—All-India Medical Council, 307—Animals, experiments on, 153—Anthracosis, miners and, 308—Anthrax, cases of, 1122—Antivivisection meeting, police called into, 101, 202—Army, dispensing in the, 1175—Artificial Cream Act, application of, 1120; limb fitting centre, 1015; silk factories and public health, 202, 1015, health conditions in, 1067; sunlight treatment, 1233—Asbestos workers and workmen's compensation, 1068—Asylum workers' superannuation, 201
Baking, night, 1287—Bills advanced, 1287, and withdrawn, 1337—Birth control information, 1014—Blind, crippled, and deaf children, education of, 152; persons in England and Wales, number of, 1068; local authorities and, 1120—Broadmoor Asylum, wards at, 1068
Cancer among industrial workers, 1066; deaths from, 1340—Caravans, local authorities and the control of, 1232—Cat, prison doctors and the infliction of the, 1232—Cement works, noxious fumes from, 1068—Census and housing conditions, 253; overcrowding standard, 153—Cheese, food value of half-meat, 103—Chemical warfare, 203—Children and bovine tuberculosis, 203; and Young Persons (Employment and Protection) Bill, 1225—Civil service and scientific research, 1066; staffs, accommodation of, 202—Cocaine and cocaine hydrochloride, manufacture of, 1176—Cod-liver oil, vitamin contents of, 1175—Colonial Development Bill, 199; Health Services, 1338; policy and health services, 1337—Colonies, visits of medical experts to the, 1174—Contagious abortion and Malta fever, 307; prevention of, in cattle, 1287—Coroner's inquests, procedure at, 957
Dairy farms, inspection of, 1288—Dangerous drugs, manufacture of, 1014; thefts of, 152—Dartmoor, river pollution on, 1233—Defective children, education of, 153; physically, operative treatment of, 153—Dentist, school, salary of a, 103—Deposit contributors and insurance benefits, 201—Dogs, hysteria in, 1067; protection of, Bill for, 1013
Education authorities, functions of, 151; (Scotland) Bill, 1173—Encephalitis lethargica, accused persons suffering from, 1175—Epizoötic abortion among dairy cattle, 1122—Escape of a mental patient, 1066—Experiments on animals, 153, 1014, 1067—Ex-Service men and rheumatism, 1287; and seven years' limit, 1121; institutional treatment of, 1122; medical and surgical treatment of, 1288—Eyesight injuries in engineering workshops, 308
Factory Acts, administration of, 957
Gas attack, protection against, 103—Gifts and inducements and panel prescriptions, 1120—Glass, broken, injuries from, 253; unsplinterable, in public vehicles, 1397—Grinding wheel closed at Sheffield, 306
Health committees, district medical officers and, 1288; Insurance administration, 1396; lectures, insurance committees and, 1066—Highlands and Islands Medical Service, 154, 1013, 1173—Holiday Bill, Annual, 1119—Hospital accommodation and expenditure, 1339—Hospitals and motor accidents, 307, 956, 1395—Houses, unfit, in Scotland, closing of, 203—Housing Bill, 1065; subsidy, the, 151, 200, 251—Hyde Park, charges of indecency in, 1120—Hydrotherapeutic treatment for insured persons, 103
Illegitimate Children (Scotland) Bill, 1065, 1173—Income limit, proposed raising of insurance, 1120—India, medical appointments in, 1233; medical research in, 102, 1014; opium in, 203—Indian medical officers, pensions of, 1066—Industrial diseases, 202; employment, hours of, 1396—Infants, care and management of, 1066—Insanitary areas, properties in, 1068—Insurance benefits in the Services, 1339—International Sickness Insurance Convention, 253
Juveniles, hours of work of, 203
Lead paint, white, use of, 200; poisoning, shipbreaking workers and, 1015—Leaflets on treatmen of disease, 1066—League of Nations and radium supplies, 103; Maternity Convention, 201—Lee, pollution of the river, 307, 1014—Liquor advertisements in post offices, 153—Local authorities, medical officers on, 1014—Local Government Act, Government and, 153; (Scotland) Act, 150; Amendment Bill, 199; medical officers, position of, 1339; superannuation of, 1175—London area, typhoid in, 1015; public cleansing in, 1067—Lunacy Law reform, 153, 1067—Lunatic asylums, married inmates of, 1340; criminal, married men in, 1339—Lunatics, pauper, expenditure on, 1225, 1288
Malaria in Bengal, 1233—Malta fever, contagious abortion and, 307—Maternity and child welfare, percentage grants for, 152, 1068; benefit, 1288—Medical referees and workmen's compensation, 1120; services in naval and military forces, 1067—Mental and physical defectives in Scotland, after-care of, 1396; defectives, 201, 1233; in Kent, care of, 1015, institutions for, 1340; deficiency, prevention and cure of, 253; deficients, sterilisation of, 203; hospital attendants, hours worked by, 153; hospitals, overcrowding of public, 1396; private, 200; unqualified nurses in, 201; nurses, registration of, 1289; Treatment Bill, 1225, 1335, 1394—Mentally deficient children, 153, 1396—Methyl chloride in refrigerators, 202—Midwives, training and employment of, 1289—Milk, bacteriological examination of, 1176; grading of, 102; licences, graded, price of, 1233; prices, Food Council and, 203, 307; high, Government and, 1016; service in schools, 1288; supply of, at maternity centres, 1067—Milk and Dairies Order, proposed extension of, 1066—Mining workers, young, medical examination of, 1069—Ministry of Health Staff, 1014—Motor horns, sounding of, at night, 1068—Motorists and third-party insurance, 1066—Mutilating operations on women and girls, 1338
Narcotic drugs for medical purposes, 1176—National Health Insurance Fund, 1340—Navy, rheumatic diseases and pulmonary tuberculosis in the, 1065—Night baking, prohibition of, 200—Noises, street, and public health, 201—Nursery schools, 152, 307, 1014, 1067, 1396
Open spaces in London, 1120—Opening of new Parliament, 48—Ophthalmic clinics, 154; treatment, approved societies and, 1121—Opium in India, 203, 1015; revenue in British Empire, 1121—Orthopædic patients, hospital treatment for, 1015—Overcrowding, decrease in, 1232; in greater London, 1396; standard of, in the Census, 1340
Panel patients in Great Britain, 102; practitioners' prescriptions, 202; practitioners, removal of, 307—Pension awards, final, 1015—Pensioners and seven years' limit, 957, 1176; and treatment allowances, 1339; medical examination of, 1015—Pensions cases, appeal tribunal in, 1340; final awards, 201; deterioration following, 1340; medical officers, 201—Phototherapy and light treatment, 202—Plague in British India, 1121—Police constables, metropolitan, health of, 308—Poor-law administration, 251—Post-vaccinal encephalitis, 102—Programme, the Government's, 956
Radium Fund, National, 1396, local hospitals and, 153; supplies, League of Nations and, 103; Trust, National, vote to, 251, 1015—Refuse, collection of, in open dust carts, 1233; nuisance at Iver, Buckinghamshire, 102; trade, removal of, 308—Rheumatic diseases, local authorities and, 1175—Rhodesia, health of miners in, 103—Rhodesian miners, hospital accommodation for, 1119—River pollution, 307, 1014, 1015, 1176; on Dartmoor, 1233—Road Traffic Bill, 1395
Schick test, school-children and the, 1233—Scottish health vote, 1395; local authorities and Local Government Act, 104—Ships, merchant, hygiene on, 101—Sexual offences against young persons, 1232—Silicosis, 1120; deaths from, in Sheffield, 1232; Order, 1014—Sleeping sickness, International Commission on, 1175—Slum areas, children in, 103; clearance schemes, 153, 200, 957, 1067, 1068; Rent Restriction Act and, 1340—Small-pox and after vaccination, deaths from, 153; concealment at Aden, 1121; hospitals, 201; in West Ham, 102; vaccination and, 1120—Sun-bathing by the Serpentine, 1122—Superannuation of Local Government officers, 1175—Surgical appliances, grants for, 1233
Tannic acid treatment for burns, 1014—Telephone call offices, village, 253—Town planning in built-up areas, 154—Treatment allowances in tuberculosis cases, 201—Tristan da Cunha, medical service in, 200—Tuberculous cows, sale of, 1287—Tuberculosis, bovine, children and, 203; non-pulmonary, 1067; Order, the, 1068; pulmonary, in the Services, 1067; war pensioners and, 307—Typhoid in London area, 1015
Uganda and Kenya, medical and health services in, 1340—Undulant fever, 1232—Unemployment schemes and public health, 1013—University graduates and choice of a career, 957
Vaccination, 307; and nervous diseases, 1287; and small-pox, 1120; deaths after, 102, 153, 1289; exemption, 1339; exemptions, registrars and, 102; of naval personnel, 1065—Vaccine lymph, manufacture of, 307, 1176—Various Industries (Silicosis) Order, 1014—Venereal disease clinics, 201—Veterinary College, Royal, 1068; Corps, Indian Army, 1288; scholarships, colonial, 1066; officers, colonial, vacancies for, 1066; services in the colonies, 103; training in London, 103—Vivisection experiments, inspection of, 1232, 1396; of dogs, 102, 153—Voluntary hospitals and motor accidents, 956; and recovery of expenses, 1068; derating and, 1067
War pensioners and tuberculosis, 307; pensions administration, 103—Washington Convention, ratification of, 102, 1014—Water famine, prevention of, 1175; shortage, 201; supplies, national, conservation of, 202, 307; supply in villages, drinking, 1289; schemes, new, 203—Widows' Pensions Bill, 1013—Women medical officers in prisons, 1232; teachers, health of, 202—Workmen's compensation, medical referees and, 1120
Yellow fever and malaria, 1175

Parry, T. Wilson, on stimulus given by religion to surgery in third epoch of neolithic period, 929
Pass-lists: Queen's University, Belfast, 48—Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow, 904—Royal Colleges of Physicians of London and Surgeons of England, 308, 1069—Royal College of Surgeons of Edinburgh, 204, 1017—Royal College of Surgeons of England, 852, 1341—Society of Apothecaries of London, 154, 203, 531, 957, 1177, 1234—University of Birmingham, 1342—University of Bristol, 1289—University of Cambridge, 852, 1397—University of Dublin, 99, 852, 1177—University of Leeds, 744—University of Liverpool, 100, 797, 1397—University of London, 204, 1234, 1341—University of Manchester, 99, 1342—University of Oxford, 99, 1397—University of Sheffield, 154, 1397
Passeron, J. S., Treatment of purulent pleurisy by pleurotomy and balneotherapy, 870
Pasteurisation as a makeshift (A.), 1205
Patey, D. H., and Scarff, R. W., Further observations on histology of carcinoma of breast, 492

Pathologist abroad, the, 962
Pathology, Clinical Chemical, Handbook of (Frank Scott Fowweather) (R.), 72 ; Human (H. T. Karsner), 2nd ed. (R.), 1314 ; Surgical (William Boyd), 2nd ed. (R.), 881
Patterson, S. W., Microscopic examination of fæces (A.D.), 727, 785
Pauper lunatics, expenditure on (P.I.), 1225 ; numbers and cost of (P.I.), 1288
Pavlov, Prof. Ivan, celebration of eightieth birthday of, 726
Pay beds in London hospitals, 143 ; at Newcastle, 158
Paying patients at Reading, 997
Payment by hospital patients, part, 192
Payne, Reginald T., Treatment of varicose veins and varicose ulcers by injection (Hunterian lecture), 313
Pearce, Louise, on experimental work on syphilis, 123
Pearson, Devonshire Penrose Hawkes (O.), 242
Pearson, S. Vere, on X ray findings in pulmonary tuberculosis, 90
Peart, J. F., Vasotomy syringe (N.I.), 613
Pectose and its allies (A.), 780
Peel, Albert A. Fitzgerald, Dilatation of auricles resulting from heart-block, 1248
Pellagra, malignant growth and (C.), 1333
Pension cases, seven-year, medical experts and (P.I.), 1176
Pensioners and treatment allowances (P.I.), 1339 ; and tuberculosis (P.I.), 307 ; medical examinations of (P.I.), 1015
Pensions administration, war (P.I.), 103 ; cases, appeal tribunal in, 1340 ; contributory, an outside view of, 1287 ; final awards (P.I.), 201, and deterioration following (P.I.), 1340 ; medical officers (P.I.), 201
Percain, 1110, 1128, 1180, *and see* Perkain
Perfumes, synthetic (A.), 237
Perineal dressing, a useful, 980
Periodontia, The Practice of (Sidney Sorrin and S. C. Miller) (R.), 127
Peritoneal cavity, diffusion anæsthesia of the, 1110, 1180
Perkain, 1074
Perkin, the late Prof. W. H. (A.), 674
Perry, Alan, on injection treatment of varicose veins, 901
Personality, Science and (William Brown) (R.), 389
Peterkin, Col. Alfred (O.), 355
Pharmaceutical Formulas, Vol. I., 10th ed. (rev. S. W. Woolley and G. P. Forrester) (R.), 285 ; Society's congress, 49 ; Therapeutics, with Pharmacology, Posology, and Toxicology (Eldin V. Lynn) (R.), 1200
Pharmacies in Germany, legal position of, 245
Pharmacognosy, Kraemer's Scientific and Applied, 3rd ed. (R.), 73
Pharmacology and Therapeutics, Introduction to (J. A. Gunn) (R.), 1147 ; Text-book of (Hugh Alister McGuigan) (R.), 667 ; Applied (A. J. Clark), 3rd ed. (R.), 1147
Pharmacopœia, Martindale and Westcott's Extra, 19th ed. (R.), 930
Pharmacy, industrial, the progress of (A.), 182 ; Physics for Students of (C. J. Smith) (R.), 286
Pharmakologie, Theoretische und Klinische (H. V. Hoesslin and others) (R.), 1200
Phenylhydrazine in polycythæmia vera (A.), 1319
Phillips, G. Ramsey, Labour saver in the examination of urine (N.I.), 172
Photographic exhibition, the autumn, 642
Phototherapy and light treatment (P.I.), 202
Phrenic evulsion, 1324
Physic, Introduction to the Study of (W. Heberden) (R.), 827
Physical Therapeutic Technic (Frank Butler Granger) (R.), 1263
Physical Treatment, On Prescribing (Matthew B. Ray) (R.), 1263
Physiological Congress, International, at Boston, 729
Physiology and the medical curriculum (L.A.), 455 ; discussion on, 478 ; the basis of treatment (W. E. Dixon), 187 ; Elements of (E. G. Martin and F. W. Weymouth) (R.), 826 ; Essentials of, Bainbridge and Menzies', 6th ed. (H. Hartridge ed.) (R.), 826 ; Text-book of (W. D. Halliburton and R. J. S. McDowall), 18th ed. (R.), 559
Physiotherapy : Theory and Clinical Application (Harry Eaton Stewart), 2nd ed. (R.), 667
Pickworth, F. A., on pituitary dysfunction and mental disorder, 877
Pictures, Scientific Examination of (A. Martin de Wild) (R.), 932
Pierce, Dr. Bedford, appointed temporary Commissioner of Board of Control, 82
Piles, complications of operations for, discussion on, 1360 ; *and see* Hæmorrhoids
Pinch, A. E. Hayward, on radium therapy, 925
Pirquet, C., Wagner, R., and Nobel, E., Nutrition of Healthy and Sick Infants and Children, 2nd ed. (R.), 1147
Pithead baths at twopence a week, 1290
Pitkin, George P., on spinal anæsthesia with spinocain, 825
Pituitary body, diseases of, discussion on, 876, 986
Placenta prævia, symptoms and diagnosis of, 387
Plague in British India (P.I.), 1121
Plasmona (N.P.), 158
Pleurisy, purulent, treatment of, by pleurotomy and balneotherapy (J. S. Passeron), 870
Pleuritic effusions, treatment of, discussion on, 278
Plimmer, R. H. A. and Violet, Food, Health, Vitamins, new ed. (R.), 718
Pneumoconiosis (A.), 394
Pneumonia, lobar, case of, in a child (Kenneth McFadyean), 276 ; treatment of (L.A.), 340
Pneumothorax, artificial, as practised in Scandinavia, 1323 ; serous effusion in, discussion on, 1145 ; induction trocar and cannula (A. I. Granville McLaughlin and A. J. Dix-Perkin) (N.I.), 552
Poisoning, silver polish, 525
Poisonous substances, labelling of, 587
Police force, medical examination of candidates for, in 1844, 589
Poliomyelitis, acute anterior, early treatment in (C.), 357
Pollution of rivers (C.), 47 ; (P.I.), 307, 1014, 1015, 1176, 1233 ; (A.), 1153
Polycythæmia vera, phenylhydrazine in (A.), 1319
Polyserositis, tuberculous, case of, with predominant pericardial involvement (L. S. T. Burrell, Dorothy C. Hare, and Joan M. Ross), 1303
Poole, M.O.H.'s report, 1350
Poor-law administration (P.I.), 251 ; hospitals and institutions, transfer of (A.), 1106 ; medical officers, remuneration of, 224 ; reform of the, B.M.A. and the, 222
Population, a stationary (A.), 832 ; figures, Rickman's second series of eighteenth century, 1128
Port sanitary authority reports, 300, 355
Portmann, Georges, and Kistler, Karl, Les Otites Moyennes (R.), 389
Portsmouth, M.O.H.'s report, 1113
Post-graduate courses : Berlin, courses at, 49, 640—Charing Cross Hospital, 797—Fellowship of Medicine and Post-Graduate Medical Association, 100, 122, 309, 359, 408, 498, 794—France, 359 — Glasgow, 853 — London Hospital, 901—Manchester Royal Infirmary, 640 —Nervous Diseases at National Hospital, Queen-square, 358—Orthopædic Surgery, 205—Royal Northern Hospital, 640, 958—St. Mary's Hospital, course at, 789—Tuberculosis Council, Joint, 1070
Poulton, E. P., on abdominal pain, 226
Powell, Walter Erichsen (O.), 585
Power, Sir D'Arcy, on surgeons who were never surgeons, 928
Power, S. M., Case of ileocæcal intussusception, with spontaneous reduction, 329
Poynton, F. John, and Moncrieff, Alan, Subcutaneous nodules in the scalp in fatal cases of glandular enlargement, 812 ; and Schlesinger, Bernard, Treatment of chorea by nirvanol, 267
Pregnancy, albuminuria of, preventive treatment of, 501 ; appendicitis in (A.), 510 ; Toxæmias of (H. J. Stander) (R.), 666 ; toxæmia, the sequels of (A.), 725 ; tuberculosis and, 980
Pregnant woman, pelvic irradiation in the (A.), 236
Presentations to medical men : Dr. Robert Fell, 1061—Dr. G. S. Pollard, 1018—Mr. T. Young Simpson, 945—Dr. Jane Walker, 1018
Preston, M.O.H.'s report, 847
Prevention of Disease in the Individual, The (Kenelm Winslow), 3rd ed. (R.), 1045
Preventive medicine in London : opening of new School of Hygiene and Tropical Medicine, 148 ; of divorce, the, 1073
Price, G. Basil, on incidence of pulmonary tuberculosis after gas poisoning and gunshot wounds of chest, 91
Pringle, J. Hogarth, Displacement of the mandibular cartilage (C.), 689
Prizes : Alvarenga prize, 1070—Buckston Browne prize and medal, 1290—Jessie Macgregor prize in medical science, to Miss Helen M. Russell, 49—Mary Kingsley medals, 745—Nobel prize, 1053—North Persian Forces Memorial Medal, 640—Trachoma prize, International, offer of, 359
Problem, an unsolved (A.), 1267
Proctology, A Text-book of Ambulant (Charles Elton Blanchard) (R.), 1314
Prohibition in America, 635
Prostatectomy incising clamp (W. K. Irwin) (N.I.), 1367
Prunol, 590
Pryce, D. Merlin, A simplification of the "halo" method of measuring the diameter of red blood corpuscles, 275
Psittacosis (A.), 1320 ; with an account of cases of human infection (A. P. Thomson), 115
Psycho-analysis and its critics, discussion at B.M.A. meeting, 196 ; an investigation of (A.), 31 ; position of (L.A.), 934
Psychological Institute, Jordanburn, 900
Psychology, The A.B.C. of (C. K. Ogden) (R.), 615 ; and medicine (Henry Yellowlees), 1129 ; the experimental method in (A.), 291
Psychoses of middle life, management of the (Ian Skottowe), 167
Public health and local government, 480 ; a chapter in (A.), 725 ; Chemistry and Bacteriology of (C. L. Dunn and D. D. Pandya) (R.), 1369 ; Collected Studies from the Bureau of Laboratories of the Department of Health of the City of New York, Vol. X. (1920-26) (R.), 504 ; degrees and diplomas in, 412 ; in local legislation (L.A.), 1048 ; principles of development of, (A.), 935 ; state of the, 572, 631

PUBLIC HEALTH SERVICES.—Infectious disease in England and Wales, weekly returns of, 47, 96, 145, 185, 250, 302, 355, 408, 479, 524, 582, 636, 688, 716, 798, 848, 908, 956, 1006, 1061, 1114, 1173, 1224, 1279, 1330, 1390—London, health of, in 1928, 248—Medical officers of health reports, 96, 144, 300, 353, 520, 577, 686, 713, 846, 1002, 1111, 1277, 1328, 1386—Mental defectives, Institutions for, reports of, 581 ; hospital reports, 249, 588, 688, 715, 1004, 1172—Port medical officer's reports, 300 ; Sanitary Authority reports, 355—Post-vaccinal encephalitis, fatal case of, 636—Salaries in the, B.M.A. and, 194—School medical officers' reports, 406, 522, 579, 1060, 1389—Small-pox, death from, 250, 355—Vaccination, deaths following, 185

Public health, unemployment schemes and (P.I.), 1013
Puerperal sepsis, air-borne infection in (L.A.), 1371
Pulmonary abscess, tonsillectomy and (A.), 673 ; antiseptic, neosalvarsan as (A.), 32 ; and intrathoracic new growths (Maurice Davidson), 1181 ; arteries, syphilitic disease of the (Dorothy C. Hare and Joan M. Ross), 806 ; tuberculosis, collapse therapy in : La Colassoterapia nella Tuberculosi Polmonare e nelle Lesioni Distruttive del Polmone (Umberto Carpi) (R.), 880, conditions simulating, 772, correlation of X ray findings with symptoms and signs, 90, development of, with special reference to "early infiltration" (H. V. Morlock), 60 ; (C.), 146, 198, for Students, Text-book of (R. C. Wingfield) (R.), 72, rheumatic diseases and, in the Navy (P.I.), 1065, sanocrysin treatment in, 771, surgical treatment of, in Scandinavia, 1328, Was muss der praktische Arzt von der chirurgischen Behandlung der Lungentuberkulose wissen ? (R.), 1148
Pulvertaft, R. J. V., Pathological effects of streptococcal toxin and hæmolysin on rabbits, with special reference to

purpura fulminans, 318; Persistence of anaerobic bacteria in war wounds, 924
Puncture of the chest: its occasions and technique (F. G. Chandler), 1084
Pure Rivers Society, 296
Purpura fulminans, ætiology of, streptococcal toxin and hæmolysin in relation to, 318
Purser, John Mallet (O.), 691
Putti, V., on early diagnosis and treatment of congenital dislocation of hip, 86

Q

Queckenstedt test, 1037
Quigley, Daniel Thomas, The Conquest of Cancer by Radium and Other Methods (R.), 616
Quinoline derivative, use of a new, in the treatment of infection (George Armitage and John Gordon, in collaboration with others), 968, 1074

R

Rabies in man, symptoms of, 741
Racial study in Scotland, 1072
Radiant heat, effect of, in the production of actinic erythema (F. Mackenzie Shattock and Mary D. Waller), 917
Radiation and living cells, 1007
Radiological Congress in London, proceedings of, 1274; developments in Germany, modern (Ffrangcon Roberts), 1239; treatment of cancer: recommendations on standards and technique, 348
Radiology, Institutes of (A.), 509; teaching of (C.), 1171
Radium and its Surgical Applications (H.S. Souttar) (R.), 1098; cancer clinic at Burnley, opening of, 1018; cases treated by, demonstration of, 878; Commission, the (A.), 725; (L.A.), 832; gifts of, to hospitals, 359; hospital for women, 481; Institute at Patna, 42; medical uses of, 1216; national, administration of (A.), 993; poisoning treated by a parathyroid extract (A.), 1105; problem, the (L.A.), 1099; seeds, implanted, 7; (C.), 146; supplies, League of Nations and (P.I.), 103; technique (A.), 33; therapy, discussion on, 925; treatment by the implantation of screened seeds (Joseph Muir), 7; Trust, National (P.I.), 251, 1015, 1396; and Commission (A.), 346; appointments to, 296, 958
Radium-needle introducer (Douglas A. Crow) (N.I.), 1366
Ramsay, A. Maitland, The Eye in General Medicine (R.), 1097
Ramsay, G. C., Assam's malaria problems and their solutions, 1356
Ramsbottom, A., on treatment of pleuritic effusions, 279
Rank, Otto, The Trauma of Birth (R.), 930
Rat poison, a dangerous (M.L.), 792
Raven, Alice, An Introduction to Individual Psychology (R.), 1263
Raw, Nathan, on fear, 254
Rawling, L. Bathe, Landmarks and Surface Markings of the Human Body, 7th ed. (R.), 1098
Rawlins, Morna, The acute vulvitis of little girls: is it gonorrhœal? (C.), 1283
Ray, Matthew B., On Prescribing Physical Treatment (R.), 1263
Rayner, Herbert, on chronic dyspepsia in children of school age, 385
Readesk, the, 311
Reason, the Growth of (Frank Lorimer) (R.), 178
Rectal surgery, anæsthesia in, discussion on, 1258
Rectum, paraffinoma of, 500
Red cell sedimentation test (A.), 343
Red Cross and mustard gas, 797
Rees, J. R., The Health of the Mind (R.), 615
Referees, medical, the reports of (L.A.) 234
Refrigeration, artificial, possible danger of, 299
Refuse, removal of trade (P.I.), 308
Registers, the Medical and Dental (C.), 1281
Registrar-General's Statistical Review of England and Wales for the Year 1928. Tables: Pt. I. Medical (L.A.), 505
Reid, A. Christie, Hypopyon ulcer of the cornea, 64
Reid, Sir Archdall (O.), 1117
Reid, William Duncan, The Heart in Modern Practice, 2nd ed. (R.), 231
Renal efficiency, an index of (A.), 183; extracts in the treatment of nephritis (A.), 293; function, physiological tests of, discussion on, 822; glycosuria, contribution to the study of (A. Muir Crawford), 214
Rennie, John K., Case of abdominal aortic aneurysm, 923
Renshaw, Arnold, on focal sepsis and diseases of the eye, 386
Répercussivité, Les Phénomènes de (André Thomas) (R.), 504

REPORTS AND ANALYTICAL RECORDS.—Fish, Canned (Quality Canning Co., Stavanger and London), 1251—Listerine antiseptic, germicidal action of, 616—Vino San Rafael (Sociedad Vinicola, Tarragona), 1251

Research hospital, a new (A.), 1050; Scottish, a new departure in, 1058
R.M.O., in defence of the (A.), 183
Reticulo-endothelial system as studied by intravitam staining, 711
Retina, detachment of, operation for (L.A.), 1202
Retinal adaptation and flicker (A.), 294
Retinitis in diabetics, 1038
Retropharyngeal abscess in infants and children (A.), 133
Rheumatic children, clinics for (C.), 1219, 1282, 1283, 1332, 1384; conditions, tonsillectomy in relation to, 571; (C.), 689, 742; disease, hæmatology of, 948; diseases and pulmonary tuberculosis in the Navy (P.I.), 1065; local authorities and (P.I.), 1175; fever, blood count in (A.), 1373; streptococcus in (A.), 620
Rheumatism, acute, the lesions of (A.), 342; sulphur and salicylates in (A.), 136; and chronic, relation between, 948; campaign against (A.), 30; hydrology and, conference on, 947; in Kensington: its relation to rats and damp, 246; Marylebone, juvenile (A.), 935; National Campaign against, report of meeting at Royal Society of Medicine, 40
Rheumatoid Arthritis, Treatment of (A. H. Douthwaite) (R.), 827
Rhinorrhœa, spasmodic, drug treatment of, 612
Rhodesia, health of miners in (P.I.), 103
Rhodesian miners, hospital accommodation for (P.I.), 1119
Rhythms of Life (D. F. Fraser-Harris) (R.), 177
Riches, E. W., Case of Kienböck's disease: recovery without operation, 1189
Rickets; value of irradiated milk compared with cod-liver oil as a source of vitamin D (K. H. Coward), 1090; (C.), 1220; therapeutic value of irradiated milk in the treatment of (Chalmers Watson, T. Y. Finlay, and J. B. King), 704
Rickman's second series of eighteenth century population figures, 1128
Riddell, John Scott (O.), 1284
Riddell, Lord, Medico-Legal Problems (R.), 137
Riddoch, George, on contusion headaches, 1308
Rideal, Dr. Samuel (A.), 1156
Ringworm: Le Traitement des teignes par l'acétate de thallium (J. G. Urueña) (R.), 503
Rist, E., Qu'est ce que la Médecine? (R.), 232
Ritchie, M. B. H., Medical work at the scouts' jamboree (C.), 410
Ritter, H., and Karrenberg, C. L., Value of bismuth in the treatment of syphilis, 971
Rivers, pollution of, (C.) 47; (P.I.), 307, 1014, 1015, 1176, 1233; (A.), 1153
Rivett, L. C., on preventive treatment of albuminuria of pregnancy, 501
Road Traffic Bill (P.I.), 1395
Roberts, Ffrangcon, Modern radiological developments in Germany, 1239
Robertson, G. M., on laws and practice as to voluntary mental boarders in Scotland, 333
Robinson, Arthur, on the causes of early abortion and sterility, 874
Robinson, Dr. Leonard Nicholas, Egyptian honour for, 589
Robinson, Leyland, on tuberculosis and pregnancy, 980
Robinson, R. H. O. B., Diagnostic value of the estimation of blood cholesterol in cholelithiasis, 540
Rockefeller Foundation: a new chapter (A.), 181; report of the (A.), 1209
Rodger, T. Ritchie, on the reproach of the chronic running ear, 612
Roentgenology, Urological (Hugh H. Young and Chas. A. Waters) (R.), 26
Rohdenburg, George L., Clinical Laboratory Procedures (R.), 614
Rolfe, S. Neville, Disinfectant packets (C.), 586
Rolleston, Sir Humphry, on medical societies: their origin and value, 731; on place of human physiology in the training of medical students, 478; Sir Clifford Allbutt: A Memoir (R.), 1044
Romanis, W. H. C., Graves's disease and thyroidectomy, 113
Romulus, or The Future of the Child (Robert T. Lewis) (R.), 534
Roncali, Demetrio B., Trattato generale e speciale delle infezioni o infiammazioni chirurgiche, Vol. I. (R.), 502
Roques, Frederick, Urethral and vaginal discharges (A.D.), 890
Rorke, Margaret, Royal Free Hospital V.D. Clinic (C.), 1171
Rose, Mary Swartz, Laboratory Handbook for Dietetics, 3rd ed. (R.), 1369
Rosher, A. B., Diagnosis of gonorrhœal infections in the male (A.D.), 836
Ross, Joan M., Burrell, L. S. T., and Hare, Dorothy, C., Case of tuberculous polyserositis with predominant pericardial involvement, 1303; and Hare, Dorothy C., Syphilitic disease of pulmonary arteries, 806
Ross, James Gillon (O.), 1285
Ross, J. Stuart, and Fairlie, H. P., Handbook of Anæsthetics, 3rd ed. (R.), 178
Ross, Philip Hedgeland (O.), 1284
Ross, Sir Ronald, and discoveries connected with malaria, letters about (R.), 666
Ross, T. A., Penal treatment for nervous disorders (C.), 527
Ross Award Fund (C.), 1171, 1234
Roth, Paul Bernard, Chordotomy in the treatment of osteoarthritis of the hip (C.), 527; Internal derangements of knee-joint, 325
Rotunda Hospital, founder of the, 1292
Rous, Peyton, The Modern Dance of Death (R.), 232
Rousseau's retreat as tuberculosis hospital, 250
Roussy, Gustave, and others, Le Cancer, 2nd ed. (R.), 1096
Rowden, W. H., Diagnosis of gastric disease (C.), 1172
Rowlands, R. P., Surgery of the gall-bladder and bile-ducts (Bradshaw lecture), 1075
Rowling, S. Thomson, on scientific administration of anæsthetics, 558
Rowntree, Cecil, on complications of operations for piles, 1360
R.A.F., Health of the (A.), 990
Royal Albert Institution Extension, 745
Royal College of Physicians of Edinburgh, admission of Fellows, 1070; annual meeting, 1289; bursaries awarded, 1070; quarterly meeting, 204, 1070
Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh and Faculty of Physicians and Surgeons of Glasgow; admission of Licentiates, 904; pass-lists, 904
Royal College of Physicians of Ireland, annual meeting, 904
Royal College of Physicians of London, admission of Members, 257, 1017; appointments, 257; award of prizes, medals, &c., 257, 904, 1017; diplomas and licences granted, 257, 1017; Harveian oration, 904
Royal College of Physicians of London and Surgeons of England, diplomas granted, 155; pass-lists, 308, 1069
Royal College of Surgeons of Edinburgh, admission of Fellows, 258, 904, 1397; award of prizes, &c., 258; diplomas granted, 258; election of office-bearers, 904; pass-lists, 204, 1017
Royal College of Surgeons of England, annual meeting of Fellows and Members, 1162; appointments and elections, 154, 309, 1341; Buckston Browne annual dinner of Fellows and Members, 1163; elections to Council, 99; examination in Canada, 412; Fellowships conferred, 155, 1341; licences granted, 155, 1122; meeting of Council, 154

309, 852, 1122, 1341; Memberships conferred, 852, 1122, 1341; pass-lists, 852, 1341; position of Members (L.A.), 1149; visit of King Faad, 309
Royal College of Surgeons in Ireland, presidency of, 1111
Royal Dundee Institution for the Blind, annual meeting, 50
Royal Faculty of Physicians and Surgeons of Glasgow, admission of Fellows, 1289; annual meeting, 1070, 1157
Royal Free Hospital, opening address at, 736; V. D. Clinic (C.), 1171
Royal Institute of Hygiene, luncheon, 412
Royal Institute of Public Health, appointments and awards, 1234; lectures at, 640; purchase of site for new premises, 692
Royal Medical Benevolent Fund, 49, 745, 1177; (C.), 1116, 1221
Royal Medical Benevolent Fund Society of Ireland, 1160
Royal Medico-Psychological Association, annual meeting, 254
Royal Sanitary Association of Scotland, congress at Kirkcaldy, 642
Royal Sanitary Institute, Congress of, at Sheffield, 148, 172
Royal Society of Edinburgh, election of officers, 1008
Royal Surgical Aid Society, annual meeting, 1290
Royal Veterinary College, reconstruction of (A.), 991; (P.I.), 1068
Rudolf, G. de M., The Meinicke microreaction, 170
Russ, Sidney, on the physicist's attitude to radium therapy, 926
Russell, Lt.-Col. A. J. H., appointed medical assessor to Royal Commission on Labour in India, 512
Russell, H. B., and Hamilton, C. K. T., Heart Disease in Childhood (R), 231
Rutland, M.O.H.'s report, 1388
Ryle, J. A., on abdominal pain, 227; on relative value of different methods of diagnosis in gastric diseases, 1041; (C.), 1221

S

Sabouraud, R., Pelades et alopécies en aires (R.), 1200
St. Bartholomew's Hospital appeals (A.), 1204
St. George's Hospital, opening address at, 732
St. Helen's, M.O.H.'s report, 1330
St. John Ambulance Brigade, annual report, 390
St. Mary's Hospital Post-Graduate Lectures, 751, 789
St. Thomas's Hospital Medical School awards, 412
Salaries of public appointments in Scotland (C.), 1172
Salford, M.O.H.'s report, 1330
Salmond, Margaret, The use of glycerin in Cæsarean section, 659
Sandes, G. M., and Hewer, E. E., Introduction to the Study of the Nervous System (R.), 1147
Sands, Irving J., Nervous and Mental Diseases for Nurses (R.), 286
Sanitation of Buildings, The (E. Thomas Swinson) (R.), 1314
Sanocrysin (L.A.), 76; in pulmonary tuberculosis, 771
Sarcoma, fowl, investigations into the blastogenic principle in (Ernst Fränkel), 538
Savage, W. G., Diagnosis of acute food poisoning (A.D.), 1054, 1107; on bacterial food poisoning, 280; Prevention of Human Tuberculosis of Bovine Origin (R.), 985; Tuberculosis of bovine origin, human, 824
Saw, death of Dr. Athelstan J. H., 1209
Sawday, A. Ernest, Appendix shield (N.I.), 128
Scalp, diseases of: Pelades et alopécies en aires (R. Sabouraud) (R.), 1200; Subcutaneous nodules in the (F. J. Poynton and Alan Moncrieff), 812; (C.), 899
Scandinavian surgery, some observations on (T. Holmes Sellors), 1214, 1273, 1323
Scarborough, S.M.O.'s report, 523
Scarff, R. W., and Patey, D. H., Further observations on histology of carcinoma of breast, 492
Scarlet fever among adults, an outbreak of (J. Todesco), 817; some aspects of bacteriology and serum treatment (A. H. G. Burton and A. R. Balmain), 545
Schafer, Sir Edward Sharpey, and Carleton, H. M., Essentials of Histology, 12th ed. (R.), 1370
Schamberg, Jay Frank, and Kolmer, John A., Acute Infectious Diseases, 2nd ed. (R.), 827
Schick test, interpretation of (R. A. O'Brien) (A.D.), 241, 296; school children and the (P.I.), 1233
Schiff, F., The medico-legal significance of blood groups, 921
Schilder's disease, case of (C. T. Champion de Crespigny and H. H. Woollard), 864
Schistosoma bovis in South Africa (C.), 690
Schlesinger, B. E., on clinical features of tuberculosis in children, 39; and Poynton, F. John, Treatment of chorea by nirvanol, 267
School-children: What they die of (L.A.), 1151; health administration in Scotland, 1384; medical officers' reports, 406, 522, 579, 1060, 1389; windows, special glass in (A.), 398
Schorstein lecture on precursors of carcinoma of stomach (A. F. Hurst), 1023
Schroeder, Knud, Sulfosin treatment of general paralysis and other disorders, 1081
Schultz-Charlton and Dick Tests, interpretation of (R. A. O'Brien) (A.D.), 296
Scientific and Industrial Research Department appointments, 589
Scoliosis, compensation treatment of, 88: discussion on, 284
Scotland, closing of unfit dwellings in (P.I.), 203

SCOTLAND, CORRESPONDENCE FROM.—Aberdeen, new scientific institutions in, 191—Animal breeding department, 1008, diseases, 191—Auxiliary hospital in the country, 41—Children's ward for nose and throat cases, 1008—Cowan House, Edinburgh, 191—Cripple children, new hospital for, 791—Edinburgh, crematorium for, 791; Royal Infirmary, bi-centenary of, 299; University: address to graduates in medicine, 298, finances of, 41—Fife, tuberculosis in, 191—Forfar, appointments in, 42—Glasgow University, new chancellor of, 739—Health services, reorganisation of, 739—Highlands and Islands Medical Service, 844—Hospital waiting list, 1280—Housing conditions in Edinburgh, 191—Insurance committees, association of, 791—Insured persons, drugs for, 791—Local Government Act of 1929, working out the, 791—Maternal mortality, investigation into, 525—Medical curriculum, the, 191—Medico-Chirurgical Society, election of officers, 1008—Mental Colony, Glasgow, 844; defectives and the public safety, 525; hospital, the ideal, 1279—Miller, the late Mr. A. G., 299—News items, 299, 1384—Nursing and midwifery, 844—Poor-law functions, transfer of, 739—Research, Scottish, new departure in, 1058—Rheumatic children, proposed clinic for, in Edinburgh, 1384—Royal Society of Edinburgh, 1008—School health administration, 1384—Water-supply in Edinburgh, 41—Young offender, the, 844

Scotland: Education Bill (P.I.), 1173; General Board of Control for, 15th annual report of (A.), 1106; illegitimate children in (P.I.), 1065, 1173; mental and physical defectives in, after-care of, (P.I.), 1396; racial study in, 1072; salaries of public appointments in (C.), 1172
Scott, Gilbert, on early diagnosis of cancer of stomach, 229
Scott, Sydney, on schoolboy's ear in clinical practice, 768
Scott, W., on bacterial food poisoning, 280
Scott, W. M., Nabarro, David, White, P. Bruce, and Dyke, S. C., Two cases of human infection by the American hog-cholera bacillus, 868
Scottish Board of Health, 10th annual report of, 92; health vote (P.I.), 1395; local authorities and Local Government Act (P.I.), 104; Women's War Hospitals, meeting of, 1290
Scouts' jamboree, medical work at the (A.), 396; (C.), 410
Sculptor of youth, a (A.), 1377
"Sealcone": a new milk container, 106
Seamen, health of (A.), 782; (C.), 849
Seamen's Hospital Society (A.), 133
Seaside, overheard at the (C.), 106
Sebaceous cyst undergoing malignant changes, case of (A. Clifford Morson and C. Rickwood Lane), 817
Sedimentation test, the red cell (A.), 343
Seeds, screened, radium treatment by implantation of (Joseph Muir), 7; (C.), 146
Sellors, T. Holmes, Some observations on Scandinavian surgery, 1214, 1273, 1323
Semon, Henry G., Microscopic findings in dermatology (A.D.), 940
Septicæmia, subacute meningococcal, clinical picture produced by (C. Lawson Stote), 701

SERVICES, THE.—Appointment of Hon. Physicians to the King, 899—Army medical services, 1234—Colonial medical services, 84, 409, 587, 796, 1061, 1272—Deaths in the services, 34, 242, 355, 626, 1234—Decoration conferred on Lt.-Col. Sir C. H. Bedford by King of Spain, 796—Indian Medical Service, 34, 84, 139, 242, 306, 355, 587, 685, 738, 796, 840, 942, 1010, 1061, 1114, 1169, 1272, 1321; pensions in (P.I.), 1066—Naval medical officers in civil hospitals, 1114—Royal Air Force, 84, 139, 409, 527, 587, 685, 796, 942, 1010, 1061, 1114, 1169, 1234, 1386; Reserve of officers, 306, 840—Royal Army Medical Corps, 34, 84, 139, 242, 306, 355, 409, 527, 587, 626, 685, 738, 796, 840, 899, 942, 1010, 1061, 1114, 1169, 1234, 1272, 1321, 1386; commissions in the, 527—Royal Naval Medical Service, 34, 84, 139, 242, 306, 355, 409, 527, 587, 626, 685, 738, 796, 840, 942, 1010, 1061, 1114, 1169, 1234, 1272, 1321, 1386—Territorial decoration, 409

Sewage analysis (A.), 938; disposal (Chadwick lecture), 961
Sex education in public schools for boys, 998; instruction in schools for girls, 999; and Disease (Robert V. Storer) (R.) 1046
Sexes, relative intelligence of the, 405
Sexual offences against young persons (P.I.), 1232; Reform Congress (A.), 568
Sharkey, Sir Seymour (O.), 582
Sharman, Albert, A congenital solitary kidney, 63
Sharp, N. A. Dyce, *Loa loa* infections 765
Shattock, F. Mackenzie, and Waller, Mary D., A study of the effect of radiant heat on the production of actinic erythema, 917
Shaw, Frank Herbert (O.), 1119
Shaw, Thomas B., Naval Hygiene (R.) 1097
Sheffield, grinding wheel closed at (P.I.), 306; Hospitals, 1283; Hospitals Council, 589; M.O.H.'s report, 713; New laboratories at, 1022
Shera, Geoffrey, on *Bacillus acidophilus* in mental patients, 1093
Sherman, Henry C., Chemistry of Food and Nutrition, 3rd ed. (R.), 1368
Shewry *v.* Maybury (M.L.), 190; a juror's reflections (C.), 98; (C.), 147
Shillito, L., Spinocain: the controllable anæsthetic (C.), 898
Ships, merchant, hygiene in (P.I.), 101
Shipway, Sir Francis, on avertin anæsthesia, 979 (C.), 1063
Shoeburyness, "Sunshine" Convalescent Home opened at, 205
Shrewsbury, M.O.H.'s report, 1004
Siccopan (N.P.), 158
Silicosis (P.I.), 1120; deaths from, in Sheffield (P.I.), 1232; in Britain, discussion on, 282; mechanism of compensation for, 779: Order (P.I.), 1014
Silver leaf as dressing for wounds, 1166
Silver polish poisoning, 525
Simpson, R. H., and Batten, Lindsey W., Some points in diagnosis of cardiac disease in children, 372
Sinus Thrombophlebitis (Alfred Braun), (R.), 287
Skin, diseases of, focal sepsis in, 361; Diseases: Grundriss der Arzneimittellehre für die Behandlung von Hautkrankheiten (K. Fürst) (R.), 1264; forceps (A. W. Holthusen) (N.I.) 288; Its Use in Six Phases (Lewis E. Hertslet) (R.), 828: microbic diseases of, X ray treatment of, discussion on, 609
Skottowe, Ian, Management of the psychoses of middle life, 167
Sleep: The Treatment of its Disorders (R. D. Gillespie) (R.), 716
Sleeping sickness, International Commission on (P.I.), 1175
Slinger, Robert Townley (O.), 640

Sloggett, Lieut.-Gen. Sir Arthur (O.), 1157, 1222
Slum areas, children in (P.I.), 103; clearance, the problem of (P.I.), 153, 200, 957, 1067, 1068; Rent Restriction Act and (P.I.), 1340
Small-pox concealment at Aden (P.I.), 1121; death from, 250, 355; deaths from and after vaccination (P.I.), 153; hospitals (P.I.), 201; a laboratory test for (A.), 992; in West Ham (P.I.), 102; vaccination and (P.I.), 1120
Smellie, J. M., on tuberculosis in early childhood, 609
Smethwick, S.M.O.'s report, 1390
Smith, A. H. D., An uncommon abdominal cyst in a young child, 65
Smith, C. J., Physics for Students of Pharmacy (R.), 286
Smith, F. E., appointed secretary to committee of Privy Council for Scientific and Industrial Research, 744
Smith, Henry, and others, Treatment of Cataract or Some Other Common Ocular Affections (R.), 668
Smithies, Beatrice M., The occupational diseases of hop-picking, 494
Smoke abatement (A.), 835
Snake-bite and antivenin (A.), 1102; case of severe, in the West of England (C.), 744; in England (C.), 850
Snake-bites, 962
Sneezing, paroxysmal (A.), 566
Social Hygiene Congress, fourth Imperial (A.), 78; proceedings of, 140

SOCIETIES, MEDICAL.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.—Clinical cases, demonstration of, 1095
HARVEIAN SOCIETY.—Award of Buckston Browne prize, 1290
HUNTERIAN SOCIETY.—Doctor and the motorist, discussion on, 1094; whitlow and its complications, discussion on, 1309
LIVERPOOL MEDICAL INSTITUTION.—Fungi, eruptions due to, 1146; lupus erythematosus, treatment of, by bismuth, 1146; squint, comparative anatomy and psychopathology of comitant convergent, 1311
MANCHESTER MEDICAL SOCIETY.—Ataxias, familial, 1095; hydatid disease of lung, 1095
MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—School-boy's ear in clinical practice, 768
MEDICAL SOCIETY OF LONDON.—Gastric diseases, relative value of different methods of diagnosis in, discussion on, 1041; head injuries, discussion on, 1307; programme, 481; radium therapy, discussion on, 925
MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.—Annual meeting, 123; clinical cases, 1198; novarsenobillon, urinary excretion of, 1197; syphilis, experimental work in, and its possible bearing on man, 123
MEDICO-LEGAL SOCIETY.—Annual dinner, 1342; France, medico-legal expert in, 23
NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—Perineal dressing, a useful, 980; tuberculosis and pregnancy, 980
PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—Meeting, 66
PATHOLOGICAL SOCIETY OF MANCHESTER. Presidential address, 1146
ROYAL ACADEMY OF MEDICINE IN IRELAND.—Annual meeting, 852; annual report, 1058; argyria, case of, 1043; diverticulitis, fatal case of, 1362; œsophagus, case of extrinsic stricture of, 1043
ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—Annual meeting, 49; *Bacillus acidophilus* in mental patients, 1093; quarterly meeting, 1093; suggestion and association tests in the feeble-minded, 1093
ROYAL SOCIETY OF MEDICINE.—Abortion, early, and sterility, causes of, discussion on, 874; acoustic tumours, diagnosis of, 1260; anæsthesia in rectal surgery, discussion on, 1258; annual dinner, 1164; meeting, 49; appointment of officers, 82; avertin anæsthesia, discussion on, 978; blood as a tissue, 819; child, the difficult discussion on, 1261; cinematographic demonstrations of prostatectomy, litholapaxy and urethrotomy, 24; Colyer prize, 852; elbow-joint, minor injuries about the, discussion on, 1256; ergot, the use of, discussion on the, 1040; iris, sarcoma of the, 1040; malaria, modern aspects of, 928; mastoid disease, radiological diagnosis of, 1260, operation, history of the, 979; mastoiditis, symptomless, value of radiography in, 1260; midwives, training of, discussion of Departmental Committee's report, 1091; ocular movements, dissociation of, 819; piles, complications of operations for, discussion on, 1360; pituitary body, diseases of, discussion on, 876, 986; retinitis in diabetics, 1038; spinal cord, surgery of the, discussion on, 1037; temporal bone, diagnostic value of X rays of, 1260; therapeutics, some principles of, 770; urological statistics as a criterion of progress, 927
ROYAL SOCIETY OF TROPICAL MEDICINE.—Tropical medicine at the turn of last century, 927
SOCIETY OF BRITISH NEUROLOGICAL SURGEONS.—Sixth meeting of, 1310
SOCIETY OF MEDICAL OFFICERS OF HEALTH.—Annual dinner, 1122
SOCIETY FOR THE STUDY OF INEBRITY.—Inebriety, some gaps in the scientific study of, 124; methylated spirits and impure forms of alcohol, toxic effects of, discussion on, 124
TUBERCULOSIS ASSOCIATION.—Pneumothorax, artificial, ætiology and treatment of serous effusion in, discussion on, 1145; proceedings at annual provincial meeting, 36, 90
WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—Blood pressure, low arterial (presidential address), 821; dinner, 100

Society of Apothecaries of London, appointment of representative to General Medical Council, 1321; diplomas granted, 203, 531; pass-lists, 154, 203, 531, 957, 1177, 1234; re-election of master, 498
Solomons, Bethel, on symptoms and diagnosis of placenta prævia, 387
Somerford, Alex. R., Glucose intolerance in various dermatoses, 1140
Somerset, M.O.H.'s report, 1277
Somerville, H., Madness in Shakesperian Tragedy (R.), 232
Somnambulism as a defence (L.A.), 1265
Sorour, M. F., Chronic parasitic funiculitis in Egypt, 708
Sorrin, Sidney, and Miller, S. C., The Practice of Periodontia (R.), 127
South Africa: the call of the High-Veld, 962
Southend hospitals, 816
Souttar, H. S., Modern hospitals in Sweden and Denmark, 242; Radium and its Surgical Applications (R.), 1098
Speech and Hearing (Harvey Fletcher) (R.), 615
Spencer, Herbert, on training of midwives, 1091
Spinal conditions, treatment of common, 86; cord, surgery of the, discussion on, 1037; curvature, case of, 1095; Disease, Diagnosis of: Le Diagnostic dans les affection de la colonne vertébrale chez les adultes (P. Oudard and others) (R.), 1098; tumour, extramedullary, case of, 1096
Spine, latent fractures of the (L.A.), 933
Spinocain: the controllable anæsthetic (C.), 898; spinal anæsthesia with, 825
Spleen, accessory, with recurring torsion of its pedicle (R. Charles Alexander), 21
Splints, a free gift of, to hospitals (A.), 622
Spriggs, E. I., on diverticulitis, 383; on doctor and patient: 33 years of mistakes, 732
Spurgin, P. B., on the doctor and the motorist, 1094
Sputa in pulmonary disease, an anaerobic streptothrix in (E. T. Thompson), 1036
Squint, comitant convergent, comparative anatomy and psychopathology of, 1311; its Causes, Pathology and Treatment (Claud Worth), 6th ed. (R.), 881; non-operative treatment of (A.), 673
Staffordshire, M.O.H.'s report, 1387
Staining of neoplastic tissues, vital (C.), 743
Stalker, J. M., Harmine or hyoscine in encephalitis (C.), 794
Stallard, H. B., on sarcoma of the iris, 1040
Standards of fitness in airmen (A.), 511
Stander, H. J., Toxæmias of Pregnancy (R.), 666
State Medical Service, discussion on at B.M.A. meeting, 224
Statham, R. S., on chronic cervicitis, 281
Steindler, Dr., on compensation treatment of scoliosis, 88
Stephenson, Thomas, Incompatibility in Prescriptions and How to Avoid It, new ed. (R.), 828
Sterilisation of mentally defective adults, the question of, 142; (P.I.), 203; of unfit (A.), 566
Sterility in women, treatment of (Frances M. Huxley) (M.T.T.), 138; and fertility in the male, interpretation of tests of (Kenneth Walker) (A.D.), 995; diet and (A.), 1269
Stevens, T. G., on retention of urine in women, 789
Stewart, Harry Eaton, Physiotherapy: Theory and Clinical Application, 2nd ed. (R.), 667
Stewart, Matthew, on relation of malignant disease to benign tumours of the alimentary tract, 710; and Hurst, A. F., Gastric and Duodenal Ulcer (R.), 1312
Stillson, W. C., Dental Anatomy: Classroom and Laboratory Quiz Compend (R.), 74
Stinson, O., on contagious abortion, 876
Stitt, E. R., Diagnosis and Treatment of Tropical Diseases, 5th ed. (R.), 126
Stobie, W., on ætiology and treatment of serous effusion in artificial pneumothorax, 1145
Stockport, S.M.O.'s report, 407
Stomach, cancer of the (L.A.), 1100; discussion on early diagnosis of, 227; precursors of (Arthur F. Hurst) (Schorstein lecture), 1023; interpretation of radiograms of the (A. E. Barclay) (A.D.), 1210
Stone and Calculous Disease of the Urinary Organs (T. Swift Joly) (R.), 285; in the Urinary Tract (H. P. Winsbury White) (R.), 774
Stones, Hilltops, and the Sea (Ruth Alexander) (R.), 232
Storer, Robert V., Sex and Disease (R.), 1046
Stote, C. Lawson, Clinical picture produced by subacute meningococcal septicæmia, 701
Strachan, G. I., on chronic cervicitis, 281
Streptococcal toxin and hæmolysin, effect of, on rabbits (R. J. V. Pulvertaft), 318
Streptococcus in rheumatic fever (A.), 620
Streptothrix, anaerobic, occurring in sputa in pulmonary disease (E. T. Thompson), 1036
Stresemann's illness, 844
Strophanthin, murder by, 245
Stuart, Donald W., Case of intussusception caused by polypi in a young adult, 381
Students' guide, 415
Study, the technique (G. F. Walker), 481
Subacute combined degeneration of cord, liver treatment in (C.), 794
Subways, London (A.), 1051
Sugar in the child's diet (L.A.), 1315; value of, in prevention and treatment of asthma in children and in treatment of infantile eczema (A. A. Osman), 1187; (C), 1283
Sugare, H., and McLeod, J. W., Bacteriological diagnosis of whooping-cough, 165
Suggestion, mass, as a clinical method (A.), 563; and association tests in the feeble-minded, 1093
Suicide at Christian Science Home (M.L.), 1325
Sulfosin treatment of general paralysis and other disorders (Knud Schroeder), 1081
Sun-bathing in public parks, 259
Sunderland hospital, a new, 848; hospitals, rating of, 197
Superannuation schemes for medical officers, need of, 224
Superstition (A.), 1052
Suprapubic opening, new method of making a permanent (W. Cuthbert Morton), 170
Suprasellar tumours, diagnosis of, 634
Surgeons who were never surgeons, 928
Surgery, the craft of (C.), 1062, 1115, 1220, 1282; Minor, Principles and Practice of (Edward Milton Foote and Edward Meakin Livingstone), 6th ed. (R.), 775, Some Principles of (Zachary Cope) (R.), 287; modern, its debt to the ancillary sciences (A. H. Burgess), 159; Orthopædic (Sir Robert Jones and Robert W. Lovett), 2nd ed. (R.), 774; Practical: Beiträge zur Practischen

Chirurgie (Albert Krecke) (R.), 1199, 1368; Recent Advances in (W. H. Ogilvie), 2nd ed. (R.), 827; some observations on Scandinavian (T. Holmes Sellors), 1214, 1273, 1323
Surgical appliances, grants for (P.I.), 1233; Infections and Inflammations: Trattato Generale e speciale delle infezioni o infiammazioni chirurgiche (Demetrio B. Roncali), Vol. I. (R.), 502
Surrey, M.O.H.'s report, 686
Surridge, C. W. W., Relationship of coroner and medical profession, 838
Susman, William, on tumours of the alimentary canal, 711
Sutures, surface (Henry de P. B. Veale) (N.I.), 501
Swimming baths, clean (A.), 889; (C.), 953
Swindon, M.O.H.'s report, 578
Swinson, E. Thomas, The Sanitation of Buildings (R.), 1314
Sydney Medical School, clinical training at the (A.), 237
Sym, Jessie C. B., Ultimate prognosis in cases of eclampsia and albuminuria of pregnancy, 698
Symbolic Process: Its Integration in Children (John F. Markey) (R.), 1148
Symes, J. O., Infectivity of erythema nodosum, 1033
Symonds, C. P., on head injuries, 1307
Symptoms, Use of, in Diagnosis of Disease (Hobart Amory Hare), 9th ed. (R.), 986
Syphilis, autohæmotherapy in (A.), 240; cardio-aortic (L.A.), 393; congenital, bismuth in the treatment of (T. M. Ling), 1034, pathogenesis of (A.), 1103; experimental work in, discussion on, 123; immunity to, 741; in pregnant women, 174; intrathecal treatment of parasyphilitic affections of the nervous system (Theodore Brunner), 117; latent, lesions of, 556; of heart and aorta, discussion on, 330; preparations of bismuth in the therapy of, discussion on, 982; treatment of (A.), 1268; value of bismuth in treatment of (H. Ritter and C. L. Karrenberg), 971; (A.), 1050; vascular, the incidence of (A.), 672

T

Tachyphage, the anxious little (A.), 395
Tait, C. B. V., and Manson-Bahr, Philip, Symptomatology of intestinal amœbiasis, 1028
Tannic acid and secondary shock (L.A.), 987; first-aid treatment of burns by, 1022; treatment for burns, 955; (C.), 1011; (P.I.), 1014
Tapeworm, the broad, in N. America (A.), 780
Taunton, S.M.O.'s report, 1060
Tavistock Clinic, the (A.), 134
Teeth and surrounding tissues, infection of, radiographic and microscopic appearance of (David A. Imrie), 375; of Yours, Those (J. Menzies Campbell) (R.), 1264
Telling, W. H. Maxwell, on diverticulitis, 384
Temporal bone, diagnostic value of X rays of the, 1260
Tennis-elbow, 1257
Test-meals, fractional, clinical interpretation of charts of (T. Izod Bennett) (A.D.), 35, 82
Tetanus, avertin for (A.), 295; post-operative (A.), 1157
Thallium, l'acétate de, Le traitement des teignes par (J. G. Urueña) (R.), 503
Thank-offering Fund, 412, 1327
Thefts from doctors' cars, (A.), 136
Therapeutics for Students of Pharmacy (A.), 781; some principles of, 770
Thomas, André, Les Phénomènes de Répercussivité (R.), 504
Thompson, C. J. S., The Mystery and Art of the Apothecary (R.), 931
Thompson, E. T., Note on an anaerobic streptothrix occurring in sputa in pulmonary disease, 1036
Thomson, A. P., Psittacosis: with an account of cases of human infection, 115
Thomson, Edgar S., Your Eyes and Their Care (R.), 533
Thomson, Ian S., Good Health (R.), 73
Thomson, John, memorial to (A.), 1376
Thomson, J. Arthur, Outlines of Zoology, 8th ed. (R.), 1370
Thomson, Sir StClair, on tuberculosis of the larynx, 773
Thoracoplastic operations, 1325
Thoracoplasty, effective (A.), 31
Thoracoscopy, 1323
Thrombi, multiple arterial, 406
Thrombo-angiitis obliterans (C.), 98
Thrombopenia, essential, liver treatment in (C.), 1332
Thrombophlebitis, Sinus (Alfred Braun) (R.), 287
Thrombosis of superior cerebellar artery (C. Worster-Drought and I. M. Allen), 1137
Thujone, experimental investigations with, 555
Thursfield, H., on tuberculosis in early childhood, 608
Thyreotoxicosetherapie, Die pathogenetischen Grundlagen der (Johan Holst) (R.), 775
Thyroid Gland, Diseases of the (A. E. Hertzler), 2nd ed. (R.), 775
Thyroidectomy, Graves's disease and (W. H. C. Romanis), 113
Thyroxine (Edward C. Kendall (R.), 559
Tick paralysis, 740
Tinfoil beds, 820
Todd, Alan H., A bone-retaining clamp (N.I.), 67; Case of hereditary contracture of little fingers (kamptodactyly), 1088; Importance of the liver in chemotherapy (C.), 743
Todesco, J., Outbreak of scarlet fever amongst adults, 817
Tonks, Henry, The craft of surgery (C.), 1062
Tonsillectomy, and pulmonary abscess (A.), 673, 784; aspiration during (A.), 784; (C.), 951; on the value of, in preventing acute rheumatism, rheumatic carditis and chorea (N. Gray Hill), 571; (C.), 689, 742
Tonsils and adenoids in France (A.), 1051; medical and surgical aspects of, discussion on, 335; orbital abscess following removal of (G. Norman Clark), 978
Torquay, M.O.H.'s report, 144; S.M.O.'s report, 1060
Toussaint, C. H. C., Development of pulmonary tuberculosis (C.), 146
Toxæmias of Pregnancy (H. J. Stander) (R.), 666
Tracheo-bronchial tree, functional studies of, 878
Trachoma, geographical distribution of, and international campaign against, 634; International league against, 798; Prize, International, 359
Transfusion, importance of, in treatment of pernicious anæmia (Alexander Goodall and A. M. Calder), 1144; of immunised blood (A.), 398
Treatment, Modern Methods of (Logan Clendening), 2nd ed. (R.), 1264; Modern Technique in, Sterility in Women (Frances M. Huxley), 138
Tredgold, A. F., Mental Deficiency (Amentia), 5th ed. (R.), 503
Trial of Jean Pierre Vaquier (ed. R. H. Blundell and R. E. Seaton) (R.), 288
Trichinosis in Vienna, 1110
Tristan da Cunha, medical service in (P.I.), 200
Trivialia, corpora (L.A.), 130
Trocar and cannula, improved (George Jessel) (N.I.), 26
Tropical Diseases, Diagnosis and Treatment of (E. R. Stitt), 5th ed. (R.), 126; Exotische Krankheiten (Martin Meyer) 2nd ed. (R.), 127; fevers of short duration (A.), 676; medicine at the turn of last century, 927, the study of (A.), 1375; Nursing (A. L. Gregg) (R.), 74
Tropics, obscure fevers of the (A.), 1205; Standard Treatments in the (J. Neil Leitch) (R.), 932
Trotter, Leslie B. C., Occupational diseases of hop-picking (C.), 638
Trotter, Wilfred, on head injuries, 1307
Truss, an ingenious, 312; (C.), 414
Trypanosomiasis, pathology of (A.), 507
Tubercle-free herd, a, 53
Tuberculosis among Jews, 51; an anti-tuberculosis motor van, 1073; and pregnancy, 980; apical and subapical, discussion on, 770; artificial light in (A.), 565; Association, proceedings at annual provincial meeting in Cambridge, 36, 90; bovine, children and (P.I.), 203; Council, Joint meeting of, 1199; diet in, 404, 526; (L.A.), 617; Gerson diet in, 1281; in Bengal, 526; in children, clinical features of, 39, infectiousness of (A.), 1053, intrathoracic, diagnosis of, 38; in early childhood, discussion on, 608; in Fife, 191; in hot countries (A.), 1153; Laboratory Diagnosis and Experimental Methods in (Henry Stuart Willis) (R.), 1369; National Association for Prevention of, annual meeting, 258; non-pulmonary (P.I.), 1067; of bovine origin, human, discussion on, 824; proceedings of annual conference, 842; Prevention of Human (W. G. Savage) (R.), 985; Order (1925) (P.I.), 1068; prevention and healing of, by turtle-vaccine therapy, 36; pulmonary, *see* Pulmonary tuberculosis; Recent Advances in (L. S. T. Burrell) (R.), 559; research in (A.), 508; war pensioners and (P.I.), 307
Tuberculous child, the potentially, 38; cows, sale of (P.I.), 1287; infection, concerted study of (A.), 782; polyserositis, *see* Polyserositis
Tuffier (A.), 993: and the chair of surgery, 1110
Tulloch, W. J., and Craigie, J., Vaccination or inoculation against small-pox (C.), 1062
Tumour immunity: treatment by autovaccination of implanted mouse carcinoma (M.63) (Thomas Lumsden), 814
Tumours, suprasellar, diagnosis of, 634
Tunbridge Wells, M.O.H.'s report, 145
Turnbull, Hubert M., and Konstam, Geoffrey L. S., Syphilis of lung with pulmonary arteritis (Ayerza's disease), 756
Turner, Alfred C., Unusual case of urinary fistula, 220
Turner, E. B., on the doctor and the motorist, 1094
Turrell, W. J., Principles of Electrotherapy and their Practical Application, 2nd ed. (R.), 25
Turtle-vaccine therapy, prevention and healing of tuberculosis by, 36
Tyne Port Sanitary Authority: report, 355
Typhoid in London area (P.I.), 1015

U

Uganda and Kenya, medical and health services in (P.I.), 1340
Ultra-violet radiation, effect of, on incidence of tar cancer in mice (Alice C. Kohn-Speyer), 1305; rays in ophthalmology, 414
Undulant fever in England (L.A.), 884; in England and Wales (P.I.), 1232; isolation of *Brucella abortus* from a case of (H. J. Nightingale and G. S. Wilson), 1143; prevalence of, in America, 299
Unemployment schemes and public health (P.I.), 1013
Ungley, C. C., Liver treatment in subacute combined degeneration of the cord (C.), 794

UNITED STATES OF AMERICA, CORRESPONDENCE FROM.—Abdominal tenderness and unnecessary operations, 740—American Medical Association, convention of, 353—Appointments, 526—Blood calcium, 1385—Carbon monoxide in low concentration, effect of, 405—Child health, White House conference on, 525—Dental research in Alaska, 526—Diploma forgeries in Illinois, 525—Drug addicts in New York City, treatment of, 1384—Encephalitis, post-vaccinal, 845—Medical literature and the mails, 635—Medical service by easy payments, 1385—Morbidity, study of 845—New York, healthy summer in, 845—Phenol wastes and the water-supply, 845—Physiological Congress, International, 405—Prohibition, 635—Refrigeration, artificial, possible danger of, 299—Rural medical service, 299—Silver polish poisoning, 525—Spa, Governor Roosevelt creates a, 526—Tariff revision, 635—Tick paralysis, 740—Tuberculosis, diet in, 526—Undulant fever, the prevalence of, 299—Venereal disease, drug stores and, 1385, prevalence of, 635—Vibratory massage, lethal possibilities of, 526—Water, consumption of, 1385—Whisky, medicinal, 405

U.S.A., medical education in (L.A.), 561

UNIVERSITIES.—University of Aberdeen, degrees conferred, 99—Belfast: Queen's University, pass-lists, 48—University of Birmingham, degrees and diplomas

conferred, 48, pass-lists, 1342—University of Bristol, pass-lists, 1289—University of Cambridge, award of Raymond Horton-Smith Prize, 1177; degrees conferred, 203, 904, 1017, 1122, 1234, 1289; pass-lists, 852, 1397—University of Dublin, appointment of Mr. W. Pearson to Chair of Surgery, 1017; pass-lists, 99, 852, 1177—University of Durham, degrees and diplomas conferred, 48—University of Edinburgh, awards of Fellowships, scholarships, and prizes, 204; degrees and diplomas conferred, 204, 957, 1397; Finances of, 41—University of Glasgow, degrees conferred, 48; new Chancellor of, 740; retiral of Sir Donald MacAlister, 258—University of Leeds, degrees conferred, 48; Honorary degree for Dr. C. H. Mayo, 258; pass-lists, 744—University of Liverpool, animals' hospital, opening of, 49; appointments, 154; endowment of research at, 1235; pass-lists, 100, 797, 1397—University of London, appointments and elections, 99, 204, 1017, 1177; awards of prizes and scholarships, 154, 204; degrees conferred, 99, 958; Fellowships, 358; lectures at, 692, 744; pass-lists, 204, 1234, 1341; University College, thoughts on (Sir Walter Fletcher), 105—University of Manchester, awards of prizes, &c., 204; pass-lists, 99, 1342—University of Melbourne, appointment of Dr. R. Marshall Allan to Chair of Obstetrics, 412—University of Oxford, award of scholarships, &c., 154, 1017; degrees conferred, 203, 904, 1177; G. H. Hunt Scholarship, award of, 1290; pass-lists, 99, 1397; Radcliffe Travelling Fellowship, 1234—University of St. Andrews, installation of Chancellor and Rector, 101—University of Sheffield, pass lists, 154, 1397—University of Sydney, appointment of Dr. Davies to Chair of Physiology, 957—University College, London, 1826–1926 (H. Hale Bellot) (R.), 125; thoughts on (Sir Walter Fletcher), 105

Urethral and vaginal discharges (Frederick Roques) (A.D.), 890
Urinary fistula, unusual case of (Alfred C. Turner), 220
Urine, examination of, labour saver in the (G. Ramsey Phillips) (N.I.), 172; retention of, in women, 789
Urobilinuria, diagnostic significance of, 753
Urological diagnosis, pitfalls in (R. M. Handfield-Jones), 1135
Urological Roentgenology (Hugh H. Young and Chas. A. Waters) (R.), 26; statistics as a criterion of progress, 927
Urology, progress in (Andrew Fullerton) (Campbell oration), 1345
Urueña, J. G., Le traitement des teignes par l'acétate de thallium (R.), 503

V

Vacancies, lists of, 50, 104, 155, 205, 259, 310, 360, 412, 482, 532, 588, 641, 693, 747, 800, 854, 906, 960, 1019, 1071, 1124, 1179, 1236, 1291, 1342, 1398
Vaccination (P.I.), 307; and encephalitis (C.), 743; and nervous diseases (P.I.), 1287; small-pox (P.I.), 1120; British Medical Association and, 223; deaths after (P.I.), 102, 153, 1289; dressings after (A.), 834; exemptions, registrars and (P.I.), 102; milder (L.A.), 233; (C.), 356; observations on (S. P. Bedson), 920; of naval personnel (P.I.), 1065; or inoculation against small-pox (C.), 952, 1062; order, the new (C.), 528; (A.), 399, text of, 411; post-vaccinal encephalitis (P.I.), 102; case of (G. N. Grose), 381, 845; post-vaccinal encephalomyelitis, 43, 1246; (C.), 1331; with meningeal sequelæ, case of (A. Lancet), 606
Vaccinators, the position of public (C.), 1282
Vaccine lymph (P.I.), 307, 1176; therapy, the future of (L.A.), 777
Vaccinia, complications of (L.A.), 506; experimental, in rabbits, on the visceral lesions that may accompany (J. C. G. Ledingham and Mary M. Barratt); 515; the immunising dose of (A.), 397
Vaginal infection, unusual, in a young married woman (E. Wordley), 1035
Vaginoscope, the (Edward Baron) (N.I.), 1046
Valour, for (L.A.), 1049
Van de Velde, Th. H., Ideal Marriage (R.), 177
Vaquier, Trial of Jean Pierre (ed. R. H. Blundell and R. E. Seaton) (R.), 288
Varicose veins, injection treatment of, 901; and varicose ulcers, treatment of, by injection (Reginald T. Payne) (Hunterian lecture), 313
Variola in rabbits (A.), 134
Vasoligature deemed assault, 1281
Vasotomy syringe (J. F. Peart) (N.I.), 613
Veale, Henry de P. B., Surface sutures (N.I.), 501
Vedder, E. B., Medicine: Its Contribution to Civilisation (R.), 717
Venereal disease, balance between malaria and (A.), 726; drug stores and, 1385; clinics (P.I.), 201, medical women at (A.), 1053; on the China Station (A.), 675; prevalence of, in U.S.A., 635
Venereal Diseases, Aids to Dermatology and (R. M. B. MacKenna) (R.), 1045
Ventilation of a picture theatre, 642
Verney, E. B., on physiological tests of renal function, 822
Verrall, Jenner, on minor injuries about the elbow-joint, 1257
Verrall, Thomas Jenner (O.), 795
Vesalius and the Inquisition myth (C.), 362
Veterinary College, Royal, reconstruction of the (A.), 991
Veterinary Medical Association, National: meeting at Ayr, 574
Veterinary research, gift for, 412; at Liverpool, 956; services in the Colonies (P.I.), 103, 1066; training in London (P.I.), 103
Vibratory massage, dangers of, 526

VIENNA, CORRESPONDENCE FROM.—Birth-rate in Vienna, the decreasing, 1110—Diffusion anæsthesia of the peritoneal cavity, 1110—Gerson diet in tuberculosis, 1281—Immunisation, cutaneous, 1281—Infectious disease in Austria, 741—News items, 1281—Noorden, Prof.: his new clinic, 740—Pathological research in Vienna, 1109—Rabies in man, symptoms of, 741—Syphilis, immunity to, 741—Trichinosis in Vienna, 1110—Vasoligature deemed assault, 1281

Village settlements and centres, 250
Vilvandré, George, on radiography of skull, 1308
Vining, C. Wilfred, Clinics for rheumatic children (C.), 1332
Vino San Rafael (R. and A. R.), 1251
Virulence of the micro-organism in infective disease (J. A. Arkwright) (Bradshaw lecture), 963
Virus Diseases: Les Ultravirus et les formes filtrantes des microbes (P. Hauduroy) (R.), 177
Visceroptosis, significance of (L.A.), 1047 (C.), 1116
"Vita" glass, stabilisation of (C.), 690
Vital statistics of 1928 (L.A.), 505
Vitamin A, colorimetric estimation of (Thomas Moore), 219; relation of carotin to (Thomas Moore), 380; B, Harben lectures and (L.A.), 316; D, value of irradiated milk compared with cod-liver oil as source of (Katharine H. Coward), 1090; (C.), 1220, 1331
Vitreous opacities, the significance of, 665
Vivisection experiments, inspection of (P.I.), 1232, 1396; of dogs (P.I.), 102, 153
Vocational guidance, 1343
Voluntary boarder in mental hospitals, discussion on, 332; hospitals, local Government Act in relation to (H. P. Newsholme), 1020; London, 1020; Lord Moynihan on, 957
Volvulus of bowel, spontaneous reduction in (R. C. McWatters), 496
von Economo, Constantin, Cruchet's "encéphalomyélite subaiguë diffuse" and epidemic encephalitis lethargica, 121
von Varga, L., Insulin in the treatment of pernicious anæmia, 764
Vonwiller, P., and Knüsel, O., Vitale Färbungen am menschlichen Auge (R.), 932
Vulvitis, acute, of little girls, is it gonorrhœal? (C.), 1115

W

Wade, Henry, on papilloma of the bladder, 499
Wagner, R., Nobel E., and Pirquet, C., Nutrition of Healthy and Sick Infants and Children, 2nd ed. (R.), 1147
Wakeley, Cecil P. G., Causation and treatment of displaced mandibular cartilage, 543
Waldschmidt-Leitz, Ernest, Enzyme Actions and Properties (R.), 176
Walker, E. W. Ainley, Cures and prevention (C.), 899
Walker, G. F., The technique of study, 481
Walker, Jane, on the return of women to medicine, 736
Walker, Kenneth, Interpretation of tests of sterility and fertility in the male (A.D.), 995; (C.), 1116
Walker, Sir Norman, Fifty years of dermatology, 209
Waller, Mary D., and Shattock, F. Mackenzie, Effect of radiant heat on the production of actinic erythema, 917
Walsh, Nathan, Milder vaccination (C.), 356
Walton, A. J., on diagnosis of gastric diseases, 1042; on place of surgery in lesions of upper abdomen, 903
Ward, Gordon, Encephalomyelitis following vaccination (C.), 1331
Ward, G. E. S., and Wright, Samson, Electrocardiographic study of human heart during and after nitrous oxide anæsthesia, 1184
Warren, Richard, Complications and mortality of appendicitis, 16
Warren, S. H., and Charles, J. A., Bacillary dysentery in an industrial area, 626
Warthin, A. S., on lesions of latent syphilis, 556; on syphilis of heart and aorta, 331
Washington Convention, ratification of (P.I.), 102
Wassermann reaction in adults, interpretation of (T. E. Osmond) (A.D.), 624, 677; (C.), 793
Water, chlorinated, the taste of (A.), 509; consumption of, in America, 1385; the shortage of (A.), 137; (P.I.), 201;
Water-supplies (P.I.), 307; national, conservation of (P.I.), 202
Water-supply, dental surgeon's liability for (A.), 78; schemes, new (P.I.), 203; the law of (L.A.), 987
Waters, Chas. A., and Young, Hugh H., Urological Roentgenology (R.), 26
Watford, M.O.H.'s report, 144
Watson, Chalmers, Irradiated milk *v.* cod-liver oil for rickets (C.), 1220; Finlay, T. Y., and King, J. B., Therapeutic value of irradiated milk in the treatment of rickets, 704
Weather report, the weekly, 694
Weber, F. Parkes, Congenital ectodermal defect (C.), 743; Subcutaneous nodules in the scalp (C.), 899; Thrombo-angiitis obliterans (C.), 98
Weihaiwei, health of, 1344
Wellcome Museum of Medical Science (A.), 33
Wellington, R. Henslowe, Sugar in asthma (C.), 1283
Welsh maternity hospital, a, 309
Werlhof's disease, blood platelets in (A.), 726
West Hartlepool, isolation hospital to be erected at, 853
Westminster Hospital, opening address at, 737; Reports, Vol. XX. (R.), 1314
Weymouth, F. W., and Martin, E. G., Elements of Physiology (R.), 826
Wheeler, Roy R., and Hunter, F. T., Laboratory Manual of the Massachusetts General Hospital, 2nd ed. (R.), 614
Wheeler, Sir William, on a fatal case of diverticulitis, 1362; on operative treatment of tuberculosis of larger joints, 712
Whitby, L. E. H., The Nurses' Handbook of Hygiene, 2nd ed. (R.), 560
White, H. P. Winsbury, Stone in the Urinary Tract (R.), 774
White, P. Bruce, Dyke, S. C., Scott, W. M., and Nabarro, David, Two cases of human infection by the American hog-cholera bacillus, 868
Whiteford, Chas. Hamilton (O.), 1118
Whitehouse, H. Beckwith, on causes of early abortion and sterility, 875
Whitlow and its complications, discussion on, 1309

Whitman, Royal, on fractures of the neck of the femur, 86
Whooping-cough, ætiology of (A.), 184; bacteriological diagnosis of (H. Sugare and J. W. McLeod), 165
Widal, Fernand, Memorial to (A.), 346; (C), 356
Widows' Pensions Bill (P.I.), 1013
Wiggers, Carl, The Pressure Pulses in the Cardiovascular System (R.), 231
Wilkie, D. P. D., Some principles in abdominal surgery (Murphy oration), 803
Willcox, Sir William, on physiological tests of renal function, 823; on toxic effects of methylated spirits and impure forms of alcohol, 124
William Mackenzie medal, award of, 1123
Willis, Henry Stuart, Laboratory Diagnosis and Experimental Methods in Tuberculosis (R.), 1369
Willius, Frederick A., Clinical Electrocardiograms (R.), 776
Wilson, C. M., on diabetes, 790
Wilson, G. S., and Nightingale, H. J., Isolation of *Brucella abortus* from a case of undulant fever, 1143
Wilson, S. A. Kinnier, on some aspects of the problem of the epilepsies, 553
Wilson, William, on relation of tonsils to rheumatic conditions (C.), 742
Wiltshire, M.O.H.'s report, 686
Wingfield, R. C., Text-book of Pulmonary Tuberculosis for Students (R.), 72
Winslow, Kenelm, The Prevention of Disease in the Individual, 3rd ed. (R.), 1045
Wokes, S., on use of ergot, 1040
Women doctors, married, 1122; medical, at V.D. clinics (A.), 1053; officers in prisons (P.I.), 1239; Work of, in India (Margaret I. Balfour and Ruth Young) (R.), 613; the return of, to medicine, 736; teachers, health of (P.I.), 202
Women's Medical Service in India, 42
Wong, K. C., Four millenniums of Chinese medicine, 156, 206, 260
Wood, W. Burton, The development of pulmonary tuberculosis (C.), 198; on the potentially tuberculous child, 38
Wood, Winifred, on rectal ether oil anæsthesia, 558
Woodhall Spa, extensions at, 54
Woods, Robert Stanton, on present position of general light therapy, 901
Woods, W. W., on causes of sudden death, 902
Woollard, H. H., and de Crespigny, C. T. Champion, A case of Schilder's disease, 864
Wobllatt, Percy Charles (O.), 585
Worcester, M.O.H.'s report, 579
Wordley, E., Unusual vaginal infection in a young married woman, 1035
Workmen's compensation in India, 42
World Federation of Educational Associations, 361
World health organisation (L.A.), 720
Worster-Drought, C., on diagnosis of frontal tumours, 662; and Allen, I. M., Thrombosis of superior cerebellar artery, 1137; and Hill, T. R., Harmine in the treatment of chronic epidemic encephalitis, 647
Worth, Claud, Squint: Its Causes, Pathology, and Treatment, 6th ed. (R.), 881
Wounded, evacuation of, by air (A.), 1269
Wounds, leaf silver as dressing for, 1166; war, persistence of anaerobic bacteria in (R. J. V. Pulvertaft), 924; X ray treatment of, 610
Wright, Garnett, on linitis plastica, 1146
Wright, James Douglas (O.), 409
Wright, Samson, and Bulman, H. A., Selective action of X rays on the blood cells of the cat, 217; and Ward, G. E. S., Electrocardiographic study of human heart during and after nitrous oxide anæsthesia, 1184
Wynne, F. E., on value of health propaganda, 879
Wynter, W. Essex, The uses of chloretone, 1245

X

X ray apparatus (A.), 1374; films, celluloid, handling and storing of, Committee's recommendations, 1006; storage of (A.), 239; Therapy, The Physics of (W. V. Mayneord) (R.), 126; treatment of commoner microbic skin diseases, 609; wounds, 610
X rays, selective action of, on blood cells of the cat (Samson Wright and H. A. Bulman), 217; (C.), 586, 639; uses of, 1398

Y

Yearsley, Macleod, Relation of the tonsils to rheumatic conditions (C.), 689
Yellow fever and malaria (P.I.), 1175
Yellowlees, Henry, on present position of voluntary mental boarder, 332; Psychology and medicine, 1129
York, M.O.H.'s report, 1003
Yorkshire hospitals and motor accidents, 531; Voluntary Hospitals Fund, 696
Young, Hugh H., and Waters, Chas. A., Urological Roentgenology (R.), 26
Young, Ruth, and Balfour, Margaret I., The Work of Medical Women in India (R.), 613

Z

Zoology, Outlines of (J. Arthur Thomson), 8th ed. (R.), 1370

CONCORDANCE

To enable the reader to determine at a glance the date and serial number of the issue of THE LANCET containing the required page reference.

Pages.	Date of Issue.	No.
1–54	July 6th	5523
55–106	„ 13th	5524
107–158	„ 20th	5525
159–208	„ 27th	5526
209–260	Aug. 3rd	5527
261–312	„ 10th	5528
313–362	„ 17th	5529
363–414	„ 24th	5530
415–482	„ 31st	5531
483–534	Sept. 7th	5532
535–590	„ 14th	5533
591–642	„ 21st	5534
643–694	„ 28th	5535
695–750	Oct. 5th	5536
751–802	„ 12th	5537
803–858	„ 19th	5538
859–910	„ 26th	5539
911–962	Nov. 2nd	5540
963–1022	„ 9th	5541
1023–1074	„ 16th	5542
1075–1128	„ 23rd	5543
1129–1180	„ 30th	5544
1181–1238	Dec. 7th	5545
1239–1292	„ 14th	5546
1293–1344	„ 21st	5547
1345–1398	„ 28th	5548

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An Address

ENTITLED

ARROGANCE AND IGNORANCE IN MEDICINE.

Delivered at the Birmingham University Medical School on Oct. 1st, 1929,

BY SIR E. FARQUHAR BUZZARD, BART., K.C.V.O., M.D. OXON.,

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WE cannot blind ourselves to the fact that the present position and reputation of the medical profession in the eyes of the public is unsatisfactory. We cannot remain deaf to the censure, sometimes good-natured, sometimes ill-natured, well-founded or baseless, so frequently passed in ordinary conversation on doctors and doctoring. It is not easy to treat as they deserve the cheap sneers which emanate so flibly from the judicial bench, nor to overlook the odious comparisons drawn between qualified and unqualified practice in the columns of our sensational and not too scrupulous newspapers. We are blamed, almost in one breath, for our conservatism, our radicalism, and our trades-unionism. There can be little doubt that, speaking generally, we live in an atmosphere which may be described as unsympathetic and suspicious, if not actually antagonistic. It may be that such an atmosphere is beneficial to our health, although I doubt it; at any rate we can do no harm and may do good if we investigate its properties and perhaps suggest such measures of ventilation as may appear to be desirable.

The charges laid against us are many, but they may be divided roughly into two groups, those of Arrogance and those of Ignorance. Let us examine the evidence which can be brought to support them, and if we are found guilty, as I have no doubt we shall be, let us hear what can be stated in mitigation. It might save the time of the Court if we plead guilty at once to both charges, and confine ourselves to pleas of justification or provocation.

ARROGANCE.

The indictment of Arrogance is laid in the following terms: "You are inclined to treat your patients as fools, to be too cocksure, and to lay down the law as if you were infallible; you won't listen to what we have got to say, and you are intolerant of the views of others."

The terms of such an indictment are general rather than specific, but certainly contain more than a grain of truth. The answer to them must also be general, and relies for its sufficiency on rather wide considerations which I must endeavour to formulate as briefly as possible.

It must be remembered, in the first place, that at the time of qualification a medical practitioner has spent at least seven years pursuing an educational curriculum which bears no resemblance to that through which the large majority of his patients have passed. In addition to mastering the principles of physics, chemistry, and biology, he has spent at least two years in the study of human physiology and anatomy, and at least three more years in acquiring some knowledge of pathology, medicine, surgery, midwifery, and a number of other special subjects. The load of information he has ingested is enormous, probably much greater than he has had time to digest, but that does not constitute the essential difference in his education from that of his future patients. During the whole of these seven years he has been trained in precise methods of investigation, has learnt to think scientifically, and to speak in scientific terms, to distinguish between facts and theories, to regard a priori conceptions with suspicion, to appreciate the value of experiments and controls, and generally has developed a critical faculty of which the lay mind is, perhaps mercifully, completely innocent.

Removed from his hospital, separated from his fellow students and teachers, and flung into practice, he finds himself in another world, where he is called upon to discuss medical matters with patients who, nominally educated, are not only ignorant of the rudiments of science, but who are often incapable of clear thinking or clear expression. He finds that their answers are unrelated to his questions, their beliefs are confused with facts, that the identity of post hoc with propter hoc is accepted without reserve, and that hearsay evidence is treated with the greatest respect. In short, he quickly realises that discussions on questions of health and ill-health are about the most difficult and exacting of the tasks with which he is confronted. If he is wise, and if he values the status of his profession, he will set himself to study this aspect of his work with the devotion he gave to his study of pathology. He will train himself to answer questions with the truth and nothing but the truth, even if he does not always feel justified in imparting the whole truth. He will learn to use language intelligible to his interrogators and he will never hesitate to express his doubts or his ignorance where his patient's welfare is at stake. Lastly, he will be prepared to give unlimited time and attention to practising the arts of listening and questioning, perhaps the most important part of his professional equipment.

Questions and their Answers.

If he is unwise and impatient he will evade inquisition, ask few questions, turn a deaf ear to stories which may be gold mines of information, and eventually justify the accusation of arrogance. It is not difficult to find excuses for this line if he has chosen it. It may be urged on his behalf that he has not the necessary time to give to the task, or that his attempts to accomplish it have always failed, his explanations having been misinterpreted and his opinions wrongly reported. Little wonder, perhaps, that he has taken the path of least resistance, although at the same time he has closed the door on the possibility of establishing that mutual confidence between doctor and patient which is essential to successful practice.

Although Medicine, year by year, is becoming more scientific in methods of investigation, no medical man can afford, and the profession cannot afford, to neglect the art of questioning or the art of listening. Therein lies an economic problem, the solution of which must some day be sought and found, but which would occupy more time than I can spare for its elaboration now. I refer to the fact that in general practice it is often impossible for a doctor to give to each patient the time necessary, not for physical examination, but for verbal cross-examination, and yet see a sufficient number of patients to earn a living wage. Skilful cross-examination will often define, and thus limit the field of, the necessary physical and chemical examination, but it requires time and perseverance, because what the doctor wants to learn, and what the patient thinks the doctor wants to learn, are rarely the same thing. The doctor may readily earn a reputation for arrogance if he cannot conduct his cross-examination with tact as well as with intelligence.

IGNORANCE.

And now for ignorance; our ignorance and that of the public. Ours is comparative, the public's is superlative. Our knowledge of the factors underlying health and disease, although comparatively small, is infinitely greater than it was even 50 years ago, and is steadily increasing. This knowledge is the standard by which we judge ourselves, but, in the public eye, our knowledge is measured entirely, and perhaps naturally, by our ability to cure. We are criticised, for instance, because we can cure neither cancer nor the common cold, and our critics assume that our ignorance of both conditions is something of which we may well be ashamed. Perhaps, but we can put up some kind of defence. In the first place, the criticism is based on an assumption, a relic of mediæval belief,

that there are so many diseases for every one of which a cure exists, if we are clever enough to find it. Such an assumption cannot really be supported for a moment by any reasonable argument, and, in fact, the more we know of disease the more does it appear to lack foundation. The claims for prevention of disease, on the other hand, are becoming daily more firmly established, and the future of medicine surely lies in that direction.

The Public Demand for Cures.

A cure for cancer is loudly demanded by the public, and every effort has been and is being made to meet that demand by attempts to discover the cause or origin of that disease. In this case we are not justified in assuming that it can be cured or prevented, even if all its mysteries are revealed.

The common cold is on a different footing, and we may probably claim to know all the material facts about it. It is not curable, because it is only the manifestation of a battle royal between invading microbes and the tissues of their victim, and all we can do is to render aid to the latter in order to shorten the struggle and hasten his almost inevitable victory. It is probably preventable, but effectual preventive measures would produce such a social upheaval, and raise such an outcry from the public, that no Minister of Health is ever likely to risk his position or his parts by bringing them into force.

Diseases may probably be divided into several groups: (1) the curable, (2) the preventable, and (3) a group comprising those about which we know too little to determine the scope of their preventability. Of these three groups the smallest is the curable, and it is safe to predict that it will always remain so, while we may legitimately hope that the preventable group will gradually increase.

Let me add, in confidence, that there is yet another group of diseases, by no means insignificant in size, which are never cured, but which almost invariably disappear without, and sometimes in spite of, medical treatment. I might go further and point out that there are many diseases afflicting mankind to which the idea of cure is not, nor is ever likely to be, applicable. Take, for instance, "infantile paralysis" or acute poliomyelitis. Seeing its lamentable results, the public naturally assumes that we know nothing about it, If we did, we ought and should be able to cure it. But that is not the case. We know a great deal about it, and the more we know the less likely does it appear that a cure will ever be forthcoming. That it is preventable, that under certain circumstances it may be possible to arrest it, are well-founded beliefs, which we are justified in holding, but a cure for the disease can only be hoped for by those who really *are* ignorant of its pathology.

Response to the Demand.

We need not lie awake and fret about this aspect of our ignorance, provided we do not as a profession claim to cure disease. That is a claim we may well leave to quacks and charlatans, who will always find a public ready to believe them. On the contrary, it should be our object to make our methods of practice and our claims so different from those of quacks that the public should have no difficulty in distinguishing them. Therein we fail, and thereby we must plead guilty to a charge of ignorance. How can we expect to be acquitted of such a charge when we see the profession taking up, and following like a flock of sheep, each new "cure-all" stunt as it is offered to it? Sour milk, hormones, all forms of electricity, and lastly, ultra-violet rays, to mention only a few, have all been exploited by the profession with so little discrimination that a public cannot but fail to distinguish between qualified and unqualified practice. Without diagnosis and without dignity have doctors applied such measures, each in its turn, to every known ailment, with the result that our wisdom and our honesty, as well as the merits of the curative agent itself, have often become discredited. And our only defence is based on the statement that patients insist on having the newest thing in the way of cures! A very poor excuse, and one quite unworthy of the profession whose scientific status we are anxious to raise.

Perhaps my indictment is drawn in somewhat strong terms, but I should not be exaggerating very greatly if I said that I never see a patient nowadays who has not already been lavishly exposed to artificial or natural sunlight—not a very good advertisement for Old King Sol, or his synthetic offspring!

Psychological Training.

Yet another aspect of our ignorance on which stress is often, and not always undeservedly laid. It is, perhaps, again the fault of an overcrowded curriculum that the psychological side of our work does not receive the attention which is its due. Every patient is an individual with his own idiosyncrasies and with his own reactions. We are accused of treating them as if they were all alike, and of ignoring their personal characteristics or peculiarities. The art of recognising such features is not an easy one to acquire, but time and labour spent in that direction is not wasted, even if the results obtained may sometimes upset the lessons we have learnt from clinical signs or from boiling test-tubes. A doctor is apt to be classed as ignorant, perhaps even arrogant, if he has not earned the title of "understanding."

THE TRUE RÔLE OF MEDICAL MEN.

I cannot here exhaust the whole sum of our iniquities, but I hope to have indicated some of the lines along which future generations of doctors may count to correct the mistakes of their misguided predecessors. In order to dissipate any gloom I may have produced, I would like to add a few words of reassurance and encouragement. The criticisms, just and unjust, to which I have referred are levelled at professional practice as a whole, rather than at doctors individually, each of whom has it in his power to earn the respect, gratitude, and affection of his patients. The personal status of the doctor depends, not so much on his knowledge or ignorance, his modesty or arrogance, as on his willingness or unwillingness to place all, or more than all, his resources at the disposal of those who seek his help. If I were permitted to coin a motto, appropriate alike to consulting-room and surgery, it would be "Give and do more than is required of you."

Let me close with a short but true story. A few weeks ago I was staying at an hotel in the south of England, and one evening I received a message to the effect that Lord Mersey, an old and eminent judge, who has since passed away, would like to have a few words with me. He greeted me in the following way: "I wanted to make your acquaintance because I knew and greatly respected your father. Many years ago, towards the end of a long illness, he was asked to see me. After consultation with the other doctors, he came back to my bedside and said, 'I don't know what is the matter with you, but I am confident that you will make a complete recovery.' He was quite right, and I have never forgotten the comfort and hope with which his words inspired me."

To the unthinking my father's words might have sounded like a confession of ignorance. To a great lawyer they appeared to be based on knowledge. There was no claim, no promise, to cure; only confident prophecy, born of experience. If our profession as a whole is to attain its rightful position let it cease to profess to cure, and be content to show the public that its knowledge and experience, limited as they yet must be, are assets of value on which reliance can be safely placed.

YORKSHIRE VOLUNTARY HOSPITALS FUND.—The East and West Ridings Voluntary Hospitals Committee has now been enlarged by the inclusion of the North Riding, which has hitherto had a separate committee. The purpose is to accomplish for Yorkshire what King Edward's Fund does for London, and the new fund will be known by the name of Princess Mary, who is the patron; Lord Lascelles will be the President. During the financial year just ended the old committee raised nearly £8000.

ON THE ALLEGED EXPERIMENTAL PRODUCTION OF MALIGNANT TUMOURS IN THE FOWL.

BY A. M. BEGG, M.B., CH.B. N.Z.,
AND
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(From the Laboratories of the Imperial Cancer Research Fund.)

IN recent years statements have appeared repeatedly in the cancer literature to the effect that it is possible to transform normal fowl cells rapidly by a simple experimental procedure into malignant cells. The first statement of this kind was made by Carrel, who claimed to have obtained a malignant tumour of the fowl by injecting a normal fowl with normal embryo emulsion and certain chemicals, such as arsenious acid, indol, skatol, and tar. One of these tumours is still being propagated in various laboratories and appears in the literature as "Carrel's indol tumour." Later Carrel's procedure was modified by his pupil A. Fischer and his collaborators, who cultivated normal fowl cells in vitro together with various chemical substances such as arsenious acid, and claimed to have produced a transformation in vitro of normal cells into malignant cells, so that the tissue cultures, when injected into normal fowls, produced a malignant new growth. In one of these experiments, published from Fischer's laboratory by Laser, the transformation was effected by cultivating normal cells of the fowl in the serum of another fowl which had received injections of tar. Even simpler was the procedure of Haagen, who cultured normal monocytes of the fowl in the ordinary way in vitro, and on injecting these cultures, together with dilute arsenious acid into six fowls, obtained, after three weeks in four of these animals, large, rapidly metastasing tumours, which, according to the description, were typical Rous tumours No. 1.

The experiments of Carrel, which are technically the simplest to perform, have been repeated in many different laboratories by experienced workers (Deelman, Roussy, Pentimalli) with uniformly negative results. Although the failure to confirm these results has been published, Carrel has not communicated any further experiments confirming his positive results.

At the International Congress of Cancer in 1928 A. Leitch and J. B. Murphy reported that they had been able to produce a malignant new growth in fowls by the injection of materials derived from normal fowls. Leitch obtained this result with the extract of a normal fowl's pancreas, while Murphy claimed to have succeeded with material obtained from a normal fowl's testicle. In the Annual Report of the British Empire Cancer Campaign for 1929 Leitch reported that, in spite of numerous repetitions of these experiments, he had been unable to confirm either his own result or those of Murphy. Murphy himself has not published a confirmation of his preliminary communication.

One curious feature of these observations is that the malignant tumour produced in all these experiments is always of the same type—namely, a sarcoma closely resembling in its histological appearance and its biological characters, such as filtrability, rate of growth, the Rous tumour No. 1. This is the filtrable tumour of the fowl which is being propagated in all the laboratories from which claims as to the alleged transformation of normal cells of the fowl into malignant cells have been published. But the spontaneous appearance of this type of tumour is by no means a particularly frequent event. Rous himself described over 40 tumours of the fowl; of these only six were filtrable, and of these six tumours only one (No. 43) had the same histological appearance and biological character (rate of growth, &c.) as Rous tumour No. 1, while two other filtrable tumours (Nos. 18 and 38) resembled each other, but differed in their histological appearance quite definitely from the tumour No. 1. Fujinami has described 32 carcinomata and seven sarcomata occurring in fowls, and of these only one resembled in its histological appearance and its biological characters the Rous tumour No. 1. Pentimalli has described 18 spontaneous tumours of the fowl, of which one was a carcinoma. None of the 17 sarcomata resembled the Rous tumour No. 1. In our laboratory, in which a large number of fowls of all ages have been under observation during the last five years, five spontaneous tumours have been found. Of these, two developed the property of filtrability, but both differed widely from each other and from the Rous tumour No. 1 in their histological appearance and their rate of growth. In this connexion we may also refer to a hitherto unpublished result obtained by our late colleague, Dr. B. R. G. Russell. By repeated subcutaneous injections of tar into fowls he succeeded in producing a hard tumour in one fowl after more than a year. Histologically it was a fibrosarcoma; transplantation with living cells gave negative results, and it showed no resemblance to the Rous tumour No. 1.

It is clear, therefore, that so far as the spontaneous development of malignancy in fowls is concerned, the same degree of variability exists as in mammals, and that the Rous tumour No. 1 does not represent a particularly frequent type of malignancy in fowls. The fact that the *alleged* experimental transformation of normal cells of the fowl into malignant ones always leads to the same type of tumour is, therefore, a feature which requires explanation, especially when one takes into consideration that the experimental conditions under which this same type of tumour was *apparently* produced from normal cells differed widely both as regards the normal cells and the material which was allowed to act upon them.

A Source of Fallacy.

During the last three years repeated attempts have been made in this laboratory to test the validity of the contention put forward by Carrel and his pupils. Quite recently experiments have been carried out to test also the results obtained by Leitch with material obtained from the pancreas of normal fowls. All of them have yielded negative results. But one of these experiments has accidentally disclosed an experimental fallacy adequate to account for the positive results which have been recorded. In view of the importance which attaches to experiments of this kind in regard to our conceptions of the ætiology of cancer, this experiment will be described in detail.

It is well known that malignant tumours of the mouse, or extracts prepared from them, do not cause malignant disease when injected into fowls. Our own experiments have also convinced us that pancreas or pancreatic extracts of a normal fowl when injected into a fowl do not produce a tumour, and the recent report of Leitch referred to above is in agreement with this. An experiment was therefore planned in which extracts from a mouse tumour were inoculated repeatedly into a normal fowl, which was subsequently to receive an extract from the pancreas of a normal fowl.

In this experiment five chicks of Exp. A had received injections once a week for three weeks of an extract from mouse carcinoma 63. The extract was made by rubbing the carcinoma in a mortar with sand and Ringer's solution, and after spinning the turbid extract filtering it through a Berkefeld filter. The last injection of the mouse tumour extract had been given on May 30th. On the same day a new experiment was started, and the same extract of carcinoma 63 as that given to the five chicks of Exp. A was injected into two new chicks (Exp. B). Four days afterwards the five chicks of Exp. A received an injection of a pancreatic extract from a normal fowl; the two chicks of Exp. B did not receive this pancreatic extract.

A fortnight after the last injection of the carcinoma extract all the five chicks of Exp. A and the two chicks of Exp. B had developed tumours at the site of inoculation of the mouse carcinoma extract. The tumours grew very rapidly, histologically they were identical with the Rous tumour No. 1; they could be transmitted by extracts to other fowls. In fact, the result was exactly as if these

seven chicks had received an injection of an active filtrate of Rous tumour No. 1.

It is clear that the positive result, which resembled those obtained by Carrel, Leitch, Murphy and others, had nothing to do with the injection of the pancreatic extract, because the tumours formed equally well in the two chicks of Exp. B which had received the injection of the mouse carcinoma extract only. The formation of these tumours was therefore clearly associated with the injection of the mouse carcinoma extract on a particular date—namely, May 30th. As soon as this was realised the experimental conditions obtaining on that day were reconstructed from the protocols, with the following result. The experiment just reported had been carried out in the afternoon. In the morning another experiment had been carried out in which an extract had been made from three different Rous tumours and inoculated into fowls. The routine of this laboratory is that the mortars used for preparing these extracts after washing and drying are sterilised. Three sterile mortars are available and all the three mortars had been used in the forenoon. They had then been washed in running water and dried, but there was no time to sterilise them for the experiment in the afternoon. The mortar used in the afternoon for the extraction of the mouse carcinoma had therefore been used in the morning for the extraction of a Rous sarcoma. Sterility of the mortar from *bacterial* contamination was not essential in preparing the extract, as it was passed through a Berkefeld filter before injection. The possibility that the mortar was still contaminated with the Rous "agent" in spite of the washing was not taken into consideration, but the result shows that in spite of the washing it still contained active material from a Rous sarcoma, which must have exhibited virulence of a high order. The virulence of the Rous sarcoma extracts show very wide fluctuations, as was shown by Gye and Andrewes, and has since been confirmed. Baker and McIntosh, for instance, state that filtrates of the tumour give sometimes positive results after the injection of as little as 0·001 c.cm. of the extract contained in 0·5 c.cm. saline, while at other times 1 c.cm. of the extract has failed to produce a tumour.

This experiment emphasises the necessity for all laboratories in which the Rous tumour No. 1 is being propagated of subjecting all apparatus used in experiments on fowls to a process of sterilisation which will ensure the destruction of the "agent." Unless this precaution is observed the inoculation of material which in itself is inactive may by contamination produce a typical Rous tumour No. 1. The experiment here described has been repeated five times, observing the precaution just mentioned. The results were uniformly negative.

Conclusion.

The alleged experimental transformation of normal cells of the fowl into malignant cells by simple chemical substances is based on isolated experiments, in which the tumours produced always had the histological appearances and biological features of Rous tumour No. 1. In view of this peculiar feature and the failure to confirm these results, they must be ascribed to an experimental error similar to that responsible for the positive results obtained in the experiment described in this paper.

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THE ULTIMATE PROGNOSIS IN CASES OF ECLAMPSIA AND ALBUMINURIA OF PREGNANCY.*

BY JESSIE C. B. SYM, M.D. EDIN.

ECLAMPSIA has long been recognised as one of the formidable risks of child-bearing. From the Registrar's reports for England, Wales, Scotland, and Ireland it appears that, on an average 600 women die annually of eclampsia in these islands. The fœtal mortality is extremely high and, since the disease often appears while the child is still premature, must remain so. The neonatal death-rate is also high. Williams estimates the fœtal mortality at 50 per cent., but considers that not more than one-third of the children leave hospital alive. Further, as 70 per cent. of the eclamptic mothers are pregnant for the first time, 400 women die annually with their first child, and the majority, had they lived, would probably have had other children. Eclampsia, therefore, though a relatively rare disease, is of importance to every community in which it occurs. Moreover, if the surviving mothers are incapacitated, either totally or partially, for further child-bearing, its importance is increased, both to the community and to the individual.

Eclampsia is always severe, but the severity of albuminuria of pregnancy varies from a mild albuminuria in the later weeks to "pre-eclampsia." The prognosis for the mother is fairly good under efficient treatment, but for the fœtus, owing to the frequency of premature labours and stillbirths, it remains poor. Albuminuria is extremely common in pregnancy; excluding the physiological albuminuria of labour it occurs in 3·5 per cent. of all pregnant women. If it affects the health of so large a percentage of child-bearing women it is a serious disease, especially if any ill-effects should persist after pregnancy. If it impairs the ability of the woman to bear future healthy, full-time children, it is from the point of view of the race perhaps more serious than eclampsia.

An attempt has therefore been made to find out what health a woman has after suffering from one of the late toxæmias of pregnancy, and how she fares in subsequent pregnancies.

Eclampsia.

A record has been made of 74 women who had eclampsia and recovered in the Royal Maternity Hospital, Edinburgh, not less than three years ago. All those now surviving have been interviewed and examined. At the time of having eclampsia the average age was 27 years; 58 per cent. were primiparæ and three had eclampsia in two pregnancies. Of the 77 pregnancies which ended in eclampsia only 14 were under medical supervision, which in many cases was of a very perfunctory and inadequate kind. In only 8 cases was there no history of warning symptoms, and it is reasonable to suppose that some of the 63 women who had no antenatal care might, under medical supervision, have been prevented from developing eclampsia. Œdema was the commonest and earliest symptom; headache was the next. The average length of gestation was 38 weeks. All the patients had albuminuria and all had convulsions. The fœtal mortality was 38·96 per cent.

Previous Gestations.—Thirty-one of the 74 women were multiparæ when they developed eclampsia, and they had among them 108 gestations. Of these, 83 were normal, 14 ended in miscarriages, and 11 were complicated by albuminuria. That is to say, six women out of 31 had albuminuria in a pregnancy previous to an eclamptic pregnancy.

Deaths.—Three patients have died—one of a second attack of eclampsia and one of pulmonary embolism after a subsequent pregnancy. The cause of the third death could not be ascertained.

* Part of a thesis accepted for the degree of M.D. at the University of Edinburgh, 1928.

Result of the Examination of the 71 Surviving Patients.—Thirty-nine women appeared to be in good health. Defects noted in the remainder were as follows: anæmia, 12; chronic constipation, 6; advanced pyorrhœa, 7; bronchitis, 1; enlarged thyroid, 2; myxœdema, 1; enlarged chronically inflamed tonsils, 3; dyspepsia, 1; neurasthenia, 1; hemiplegia (result of cerebral hæmorrhage), 1.

All patients examined are of hospital class and therefore the number who have anæmia is high. Nearly all had some oral sepsis. Special attention was given to the cardiac, renal, and vascular systems. The urine was examined, blood pressure readings were made, the blood-urea was estimated, and the urea-concentration test was done. In two (2·8 per cent.) of the patients a diagnosis of chronic nephritis was made. Ten gave at least one result which was below par in one or other of the tests employed (10·9 per cent.). In five cases (8 per cent.) the tests were incompletely done and no deductions could be drawn. The hearts, arteries, and kidneys of 54 patients (76 per cent.) were healthy.

The following list shows how the 12 patients, A to L, whose renal and cardiovascular systems were judged unsatisfactory, fared in pregnancies subsequent to eclampsia.

Pregnancies Subsequent to Eclampsia.

A. 1 normal. 1 albuminuria. 1 in progress, normal.
B. 1 ? normal. 3 albuminuria. 3 miscarriages.
C. No subsequent pregnancies.
D. 1 albuminuria.
E. 1 albuminuria.
F. No subsequent pregnancies.
G. 1 albuminuria.
H. 1 miscarriage.
I. No subsequent pregnancies.
J. 1 albuminuria.
K. 1 albuminuria. 1 miscarriage.
L. No subsequent pregnancies.

These patients all complained of vaguely unsatisfactory health.

It has been shown that if a woman has an impaired renal and cardiac vascular system, her post-eclamptic pregnancies will almost certainly be complicated, but that is far from saying that those whose kidneys are satisfactory have had healthy pregnancies after eclampsia.

Subsequent Pregnancies.—Of the 74 women, 42 were pregnant after eclampsia and had between them 67 gestations. Seven of these gestations are in progress; 6 ended in abortions or miscarriages. There have therefore been 54 labours, of which 48 (88·89 per cent.) ended in live births, and 6 in stillbirths. Four of the stillbirths occurred in cases of albuminuria, one in recurrent eclampsia.

Type of Subsequent Gestation.—Of the 42 women who again became pregnant, 17 (40 per cent.) showed late toxæmia in subsequent pregnancies at least once. Of 67 gestations, 10·45 per cent. are in progress, 53·73 per cent. were normal, 26·87 per cent. were complicated by late toxæmia (22·39 per cent. by albuminuria and 4·48 per by cent. eclampsia), and 8·96 per cent. ended in abortions or miscarriages.

Of these 42 women who have been pregnant after eclampsia, 40 have been pregnant again once, 12 twice, 4 three times, and 1 each four, five, six, and seven times.

Of the 40 *first-subsequent* pregnancies, 25 (62·5 per cent.) were normal, 11 (27·5 per cent.) were complicated by albuminuria, and 2 (5 per cent.) by eclampsia, whilst 2 (5 per cent.) ended in abortion or miscarriage.

Of the 12 *second-subsequent* pregnancies, 9 (75 per cent.) were normal, 2 (16·7 per cent.) were complicated by albuminuria, and 1 (8·3 per cent.) ended in miscarriage.

Of the four *third-subsequent* pregnancies, 1 proceeded normally, 1 was complicated by eclampsia, and 2 ended in miscarriage.

The one *fourth-subsequent* pregnancy was complicated by albuminuria, the one *fifth-subsequent* pregnancy was normal, the one *sixth-subsequent* pregnancy was complicated by albuminuria, and the one *seventh-subsequent* pregnancy ended in miscarriage.

Albuminuria of Pregnancy.

A similar investigation was made of 81 patients who had albuminuria of pregnancy, for which they were treated in the Royal Maternity Hospital, Edinburgh, at some time during the same period—i.e., March, 1921, to March, 1926. The average age of the patients when they first developed albuminuria of pregnancy was 29·6 years, and 69·5 per cent.—58 women—were primigravid when they had their first attack.

Previous Pregnancies.—The 23 multiparæ had had 81 previous pregnancies between them before their attack of albuminuria. These were all normal gestations.

Previous Illnesses.—A record was made of any illness from which these women had suffered before their first attack of albuminuria.

	Patients.		Patients.
Scarlet fever	17	Influenza (severe)	2
Diphtheria	2	Anæmia	4
Other exanthemata	26	Appendicitis	1
Tuberculosis	3	Typhoid	2
Bronchitis, pneumonia, pleurisy	9	Syphilis	4
Rheumatic fever, chorea	3	Dysmenorrhœa	2

Deaths.—Of the 81 patients, 3 (or almost 5 per cent.) have died, one of a gastric ulcer, another of antepartum and postpartum hæmorrhage—this patient was a 3-para and both previous pregnancies had been complicated by albuminuria—and the third of a cerebral hæmorrhage two months after delivery.

Result of the Examination of the Surviving 78 Patients.—Thirty-three are in good health and seven have poor health. Five of these react unfavourably to the renal and cardiovascular tests; one has active tuberculosis and one refuses to have any examination made. Four patients volunteered the statement that their health "was good except when they were pregnant," at which time they have an indefinite feeling of tiredness from the fourth month onward. All these patients show good renal test results and each has had albuminuria in every pregnancy she has undergone. Thirty-eight patients have indifferent health, which was found to be due to one of the following causes: anæmia, syphilis, heart lesions of rheumatic origin, pituitary deficiency, hyperthyroidism, toxic goitre, dysmenorrhœa, menopausal symptoms, cervicitis, menorrhagia, uterine fibroids, tuberculosis, neurasthenia, bronchitis, advanced pyorrhœa, chronic constipation.

The same attention was given to the cardiac, vascular, and renal systems as in the women who had had eclampsia, and the same tests were done. In six cases a diagnosis of chronic nephritis was made and five more cases gave poor results in at least one test in each case. This result may be compared with that obtained in the eclamptic series:—

	Good results of tests.	Poor results of tests.	Tests incompletely done.
	Per cent.	Per cent.	Per cent.
Eclampsia series	76	16·9	8
Albuminuria series	81	13	6

Table I. shows how the 11 patients whose renal and cardiovascular test results were considered unsatisfactory fared in their pregnancies.

It will be seen from this table that once an abnormal pregnancy has occurred it has only been followed in one instance—and that a doubtful one—by a normal pregnancy. Patients who fail to react to these tests are almost certain to fail under the test of pregnancy, in this series as in the first. Only two of these 11 cases have had scarlet fever.

As in Series I., therefore, patients with unsatisfactory tests develop toxæmia when pregnant, but, again as in Series I., the fact that the non-gravid, post-toxæmic patient has satisfactory test results does not mean that she will pass normally through a subsequent pregnancy. This is even more obvious in the second series.

Type of "First Abnormal" Pregnancies.—Of the 81 women who were pregnant, 8 miscarried and 53 of the 73 labours were spontaneous. Premature labour occurred in 31 cases. 76 children were born (twin pregnancy occurred thrice in the series), and 18 (i.e., 23·7 per cent.) were stillborn.

Risks to Mother in Subsequent Pregnancy.—Of the 81 mothers, 30 did not become pregnant again after one attack of albuminuria. The remaining 51 women have had altogether 90 subsequent gestations, and 2 (or 3·92 per cent.) have died.

TABLE I.

	Pregnancy—						
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh
A	Alb. ++	Alb. +++	Alb. ++	—	—	—	—
B	Misc.	Alb. +++	Alb. ++	—	—	—	—
C	Norm.	Norm.	Norm.	Alb.	Misc. c. alb.	Alb. +	—
D	Norm.	Norm.	Norm.	Norm.	Norm.	Alb.	—
E	Alb. +	Alb. ++	Alb. +	Misc. c. alb.	Alb.	—	—
F	Norm.	Alb. +++	Alb. +++	Alb. ++	—	—	—
G	? Alb. +	Alb. ++	? Alb. +++	? Norm.	Alb. +++	Alb. +++	Alb. +
H	Norm.	Norm.	Norm.	Norm.	Norm.	Alb. +++	—
I	Alb. +	Alb. +++	—	—	—	—	—
J	Norm.	Norm.	Norm.	Norm.	Alb. ++	—	—
K	First ten pregnancies, normal; eleventh, miscarriage; twelfth, albuminuria.						

Alb. = Albuminuria. Misc. = Miscarriage. Norm. = Normal.

Risk of Mother Developing Albuminuria Again.—Of the 51 women who became pregnant after one attack of albuminuria, 28 (i.e., 55 per cent.) showed late toxæmia in at least one of their subsequent pregnancies.

Chance of Living Child in a Subsequent Gestation.—Of the 90 subsequent gestations, 6 are in progress and 14 ended in abortion or miscarriage. Of the 70 subsequent labours, 61 terminated in live births and 9 children were stillborn (12·9 per cent.). All cases of stillbirth were associated with albuminuria.

Types of Subsequent Pregnancies.—There have been 90 gestations subsequent to one attack of toxæmia. Of these, 44 were complicated with albuminuria (5 doubtfully), 26 were normal, 14 ended in abortion or miscarriage, and 6 are in progress (5 normally, 1 abnormally). Albuminuria has therefore occurred in 48·89 per cent. of these cases and abortion or miscarriage in 15·56 per cent., while 28·89 per cent. were normal and 6·6 per cent. are in progress.

First-subsequent Pregnancies.—Of these 51 gestations, 21 (41 per cent.) were normal, 24 (47 per cent.) were complicated by albuminuria, 5 ended in abortion or miscarriage, and 1 is in normal progress. In the 45 labours 7 stillbirths occurred, all in association with albuminuria.

Second-subsequent Pregnancies.—Of 22 gestations, 5 (22·5 per cent.) proceeded normally, 10 (45 per cent.) were complicated by albuminuria, 3 are in normal progress, and 4 ended in abortion or miscarriage. Stillbirths occurred in 2 of the 15 labours, both in association with albuminuria.

Third-subsequent Pregnancies.—Of 10 gestations, 1 proceeded normally, 5 were complicated by albuminuria, 3 ended in abortion or miscarriage, and 1 is in normal progress.

Fourth-subsequent Pregnancies.—Of three gestations, one was complicated by albuminuria and one ended in miscarriage. The third is in progress and the patient has albuminuria. Thus only one gestation has terminated in labour, and the child was stillborn.

Fifth-subsequent Pregnancies.—Both gestations were complicated by albuminuria.

Sixth-subsequent Pregnancies.—Of two cases, one ended in miscarriage and one was complicated by albuminuria.

The chance that albuminuria will recur in a subsequent pregnancy is thus seen to be very great. There is a definite predisposition to recurrence after one attack, but in only a small number of those who develop the disease—even of those who develop it several times—is it possible to detect any renal or other impairment when the patient is non-gravid. More than half the gestations subsequent to one attack of albuminuria of pregnancy are abnormal; more than half the women who become pregnant after one attack develop toxæmia again. But the women, like those of Series I., appear and remain well for the most part so long as they are not pregnant.

The figures obtained in the two series may be compared (Table II.).

TABLE II.

Gestations subsequent to first attack of toxæmia.	First series (per cent.).	Second series (per cent.).
Albuminuria	23·39	48·89
Eclampsia	4·48	—
Normal	53·73	28·89
Abortion or miscarriage	8·96	15·56
Gestations in progress	10·45	6·6
Chances of a living child in subsequent gestations (calculated per 100 labours)	88·89	87·1

Comment.

It has been shown that recurrence of late toxæmia is commoner after albuminuria than after eclampsia, but if the two series are taken together 37·9 per cent. of the subsequent gestations are complicated by late toxæmia. As toxæmia of this type occurs in roughly 2·5 per cent. of all pregnant women, there is a definite predisposition to a recurrence after one attack, especially when it is remembered that two-thirds to three-quarters of all toxæmic conditions are found in primiparæ. First pregnancies form from one-quarter to one-fifth of all pregnancies; thus the liability to toxæmia is ten times as great in primiparæ as in multiparæ.

In only a small number of cases can the tendency to develop toxæmia be explained by the presence of nephritis.

The prognosis for a woman who has suffered from eclampsia is—as far as further childbearing goes—better than that for a woman who has had albuminuria.

Among the cases grouped as "albuminuria of pregnancy" various types are found. If these could be differentiated the difference in prognosis would be further stressed. Amongst them are:—

(1) *Cases with an Undoubted Renal Basis.*—Renal impairment is present before, aggravated by, and persists after, pregnancy. Subsequent pregnancies increase the damage. A stillbirth or a miscarriage is the probable end of the pregnancy.

(2) *Cases of Acute Toxæmia.*—The prognosis as regards the future of these cases is the same as that for cases of eclampsia. Could these cases be eliminated from the series of albuminuria of pregnancy the percentage of recurrence of toxæmia in the remainder would be increased.

(3) When cases belonging to the two foregoing groups have been excluded a large number of *cases of unknown origin* remain. During the toxæmic pregnancy the kidney may be apparently greatly damaged, but its capacity for recovery is apparently very great and all signs of disease disappear in the puerperium. No signs appear unless the patient is pregnant again. That is to say, if the criterion of cure is the ability of the individual to remain healthy in a subsequent pregnancy, cure is incomplete. Under the stress of pregnancy the kidney will again show signs of disease. If permanent traces of kidney damage do at length remain in the puerperium these are indistinguishable from ordinary nephritis of the "mixed" type.

The practical outcome of an inquiry such as this is to emphasise the importance of the work of the antenatal and postnatal clinics. While knowledge of the changes which occur in the normal pregnant and puerperal woman are so scanty, knowledge of the toxæmic and post-toxæmic patient can only be incomplete. The benefit to the toxæmic patient herself cannot be overestimated. The incidence of eclampsia is enormously reduced in the presence of antenatal care, though fulminating cases still occur. Mild forms of toxæmia are dealt with and discovered early. A precise knowledge of the time and mode of onset of a toxæmia is invaluable in assessing the dangers of continuing the pregnancy. It is also invaluable in classifying the toxæmia—a classification which can only be made by the postnatal observer.

No accurate ultimate prognosis should be attempted without it, and, if future pregnancy occurs, it is also very valuable information.

The work of the postnatal clinics is no less important. If the return to normal is incomplete, succeeding pregnancies will certainly not be normal and, should pregnancy occur, the patient's chances of bearing a live child are much poorer than those of the healthy woman. If the return to normal is slow it is likely that a subsequent pregnancy will be abnormal. Even if the return to normal is rapid the possibility that the succeeding pregnancy will be toxæmic is greater than in a woman who has had normal pregnancies or who is a healthy primipara. For the furtherance of knowledge, as well as for the benefit of the individual patient, all post- and antenatal information should be laid side by side.

In view of the danger which the toxæmic patient runs the value of induction of labour must be emphasised, particularly induction after viability of the child has been reached in a patient who is known to have had one toxæmic pregnancy. In this case the child's interests march with the mother's. Non-interference gives little practical gain and may result in great loss. It is impossible not to think that many cases of albuminuria are carried on foolishly long. An obstetrician should always seriously consider induction in every case of albuminuria which has persisted, despite treatment, for over three weeks, even if the case presents no acute features.

Scheme for Observation of the Toxæmic Case in the Puerperium.

1. Patients should be kept in hospital for at least three weeks postpartum. Regular urinary analysis and blood pressure readings should be made. Before discharge the fundi oculi should be examined and a urea-concentration test done. If any of these results are abnormal blood analysis should be made. The patient's general condition should be noted and a tentative diagnosis made of the type of toxæmia.

2. Three months postpartum the patient should report at the postnatal clinic. Her general condition and her symptoms, if any, should be noted. A urinary analysis and a blood pressure reading should be taken and, in the presence of abnormality, a blood analysis and an ophthalmoscopic examination as well. The diagnosis should be reviewed and corrected if necessary.

3. If the patient has apparently recovered completely at the time of the second examination, she should report again one year after delivery. If she shows any abnormality she should report 6 and 12 months after delivery, and each time the same examination should be made. Changes which persist for a year may be regarded as permanent and the patient classified accordingly.

4. In the event of a subsequent pregnancy all postnatal data should be placed, with the diagnosis of the type of toxæmia, in the hands of the attending obstetrician.

5. All patients who have had late toxæmia of pregnancy of any degree should be instructed to report to the antenatal clinic if they know, or suspect, that they are pregnant.

Long-continued observation of the post-toxæmic patient is necessary for an accurate classification of the toxæmia, for an accurate ultimate prognosis in the individual, and for an effective guide to treatment in future pregnancies.

Summary.

1. About a quarter of the pregnancies which occur after eclampsia are complicated by some degree of toxæmia. 2. Almost half the pregnancies which occur after albuminuria are complicated by some degree of toxæmia. 3. The earlier albuminuria begins in pregnancy and the longer it persists the more likely is it to cause renal damage and to recur in a future pregnancy. 4. Recurrence of toxæmia occurs in the absence of any detectable trace of renal impairment. 5. If traces of renal damage are absent, and if patients do not become pregnant they remain in good health.

I am much indebted to the medical staff of the Maternity Hospital, Edinburgh, for access to records of cases, and for permission to examine patients at the hospital.

THE CLINICAL PICTURE PRODUCED BY SUBACUTE MENINGOCOCCAL SEPTICÆMIA.

BY C. LAWSON STOTE, M.B. CAMB., M.R.C.S. ENG.

RECENT bacteriological investigations have shown that meningococcal meningitis may often be preceded or accompanied by a septicæmia of relatively short duration and of secondary importance. On the other hand, primary meningococcal septicæmia may occur with or without meningeal involvement, the septicæmia being the striking clinical feature. These latter cases may be classified in the following way:

1. *Acute Septicæmia.*—Localisation of meningococci in the meninges occurs a few days after the onset of septicæmic symptoms. The onset is sudden, there are very marked septic symptoms, great prostration, and usually a petechial rash. Death occurs in a few hours or a few days. Meningococci may be cultured from the blood. Andrewes in 1906 was one of the first to describe a case of this type.

2. *Subacute Septicæmia.*—This group includes cases of meningococcal septicæmia which run a course of from one to several months' duration. They may be further subdivided into: (*a*) those cases which eventually show meningeal involvement; (*b*) those associated with infective endocarditis; (*c*) those exhibiting the features of a pure septicæmia without metastases.

It is the clinical picture presented by this second group of subacute cases that I wish to describe, particularly those which show a pure septicæmia without metastases. The reason for treating these cases separately is that they all reveal themselves by a well-differentiated clinical picture, which renders their diagnosis comparatively easy. The condition has not received much attention in this country, and though it is probably rare it seems likely that the majority of cases are unrecognised.

Rolleston, in an extensive survey of all types of meningococcal infections, briefly shows that "intermittent meningococcic fever" due to septicæmia may (*a*) last for weeks without any meningitic symptoms, or (*b*) may follow meningitis, or (*c*) show transient meningitic symptoms, or (*d*) terminate in meningitis, but states that a correct diagnosis is seldom made in the absence of meningitic symptoms.

Graves, Dulaney, and Michelson, in publishing a case of chronic septicæmia in which meningococci were present in the blood and cerebro-spinal fluid and which recovered after about three months' pyrexia, state that 13 cases of subacute or chronic meningococcal septicæmia have been described in the American literature. Of these, three, ending in death, had associated endocarditis (those of Warfield and Walker, Cecil and Soper, and Dock); four had septicæmia with a secondary meningitis for a varying length of time and recovered, while the remaining six had septicæmia without involvement of the heart or meninges. These last, which were described respectively by Bray, Herrick, Morgan, Bloedorn, Neergaard and Marlow, all had intermittent temperatures for two to five months, but eventually became quite well. The authors state that subacute or chronic meningococcal septicæmia shows a triad of symptoms consisting of intermittent fevers with rigors, skin eruptions, and arthropathies. The eruptions come in crops with a rise in temperature, and may be either purpuric, macular, or papular.

The joint pains are usually slight, without physical signs, but there may rarely be the formation of fluid.

In March, 1928, O. Herman and M. Eifschitz recorded a case in a man aged 30 who had remittent fever, erythematous eruptions on the limbs, no physical signs, and a relatively good general condition. A pure culture of meningococci was obtained from the blood, and the man made a spontaneous recovery. These authors quote Friedemann and Deicher as stating that the characteristic features of meningococcal septicæmia are :

1. Nasal, pharyngeal, or bronchial catarrh.
2. Fever, remittent at first and then irregular, lasting from one to several months.
3. Erythematous eruptions.
4. Protracted course without physical signs.
5. A relatively good general condition.

G. Mahieu in 1928 collected seven cases which appeared to be subacute meningococcal septicæmia. In three of these meningococci were present in the blood and there was no meningeal involvement, in one case the organisms were recovered both from the blood and the cerebro-spinal fluid ; and in two the blood culture was negative, but the organisms were obtained from the cerebro-spinal fluid. In the seventh case no organisms were isolated but the symptoms were analogous to those of the other six. All these cases showed remittent temperature running a subacute course (from two to five months), accompanied by joint and muscular pains without physical signs, and erythematous eruptions, especially on the limbs and face. All the cases made a complete recovery.

Two New Cases.

I wish to describe two cases of subacute meningococcal septicæmia I had under my care at the London Hospital while I was house physician. By a remarkable coincidence I admitted both cases from the receiving room on the same day, and as they were in the same ward throughout their illness I had a unique opportunity of noting the similarity of the two. Both were boys; they came from entirely different neighbourhoods of London and had not been associated with each other outside. There was no epidemic of cerebro-spinal meningitis at the time. I am greatly indebted to Dr. Robert Hutchison for giving me permission to publish these two cases, and also to Dr. G. T. Western for allowing me to quote the results of the blood cultures.

CASE 1.—A schoolboy, aged 7, was admitted to the London Hospital on Nov. 17th, 1927.

History.—His mother said he had been quite well until five weeks before, when he had gone off his food and begun to feel unwell. At the same time a rash had appeared on his hands, arms, legs, and face. This had consisted of scattered, non-irritating spots, none of which had appeared on the trunk. Some spots had faded, while new ones had made their appearance in crops ever since the onset of the illness. All this while (five weeks) he had been kept in bed and the doctor stated that he had had a swinging temperature, up to 103° F. at night. Pains had been present all the time in the large joints of the arms and legs. These had never been severe, and flitted about from joint to joint, rarely being more than a day in any one joint. The joints had never been red or swollen. He had vomited after food every day until a week before, but not since. These had been ordinary food vomits. The bowels were regular and there was no diarrhœa. At no time were there any headaches, sore-throat, backache, or earache. There had been no discharge from the eyes or nose, and no shivering attacks were noticed. The only previous illness he had had was measles when 2 years old. The mother and father were alive and healthy. There were five other children alive and well, and three had died, two of pneumonia and one of scalds.

On admission he appeared as a slightly-built little boy, somewhat pale but not anæmic or under-nourished. The tongue was moist and clean and the throat clear. The eyes were not inflamed. There was no evidence of nasal or bronchial catarrh. There was a pink papular eruption copious on the face, arms, and legs, sparse on the buttocks and back, and absent from the chest and abdomen. Each papule consisted of a uniformly coloured, slightly raised, rose-pink area, varying in size from that of a pin's head to that of a threepenny piece. A very few had punctate purpuric centres. They were not irritating. There was no pain or swelling of any joint. The spleen was not palpable and nothing abnormal was found in the abdomen, heart, or lungs. Nothing abnormal was found on examination of the central nervous system and there was no clinical suggestion of meningeal infection.

Course of Illness.—The temperature was 100·5° F. on admission. For the next ten weeks the temperature was swinging between normal and 102° to 103°. The highest temperature usually occurred in the evening, but occasionally in the morning. Every now and again a period varying between one and four days would pass without pyrexia. During the following three weeks (Jan. 26th to Feb. 15th) there was an occasional rise up to 100° F. After this the temperature settled. The pulse-rate throughout remained at just over 100 per minute, and the respiration-rate at a little over 20.

Throughout the period of pyrexia the patient appeared remarkably well, considering the temperature he was running. He would sit up in bed all day long, play with his toys, laugh and joke with the other boys in the ward, and sleep and eat well. It was only for a few hours every second day or so that he would appear tired and rather ill, and would lie down, become quiet, and lose interest. These periods would always coincide with a " peak " in the temperature chart and usually with the complaint of joint pains, either in the legs or arms. The day following would usually yield a fresh crop of spots. The rash had the same characteristic throughout and never completely vanished until the temperature finally settled. One crop of papules would start to fade three or four days after its appearance and then be succeeded by a second. The rash was chiefly confined to the limbs and face, was sparse on the buttocks and back, and never appeared on the chest or abdomen. At times a very few of the papules would show a definite punctate purpuric centre. The spleen became just palpable at the beginning of December (the eighth week of the disease). The edge could be felt quite distinctly for a day or two, but was not felt again after this. The heart sounds remained normal throughout. There were no signs at all indicating any meningeal infection. The slight headaches complained of at times were never severe. Joint pains would come and go from day to day. One of the large joints of the arms or legs would be affected for a day at a time, causing pain on movement, but no swelling or redness. The pains were never very severe and would not keep him awake at night. They disappeared with the fall of temperature.

When he was discharged from hospital on May 15th, 1928, there were no physical signs of disease and he appeared quite well in himself.

The following *special investigations* were undertaken while he was in hospital. The blood culture on Nov. 17th and Dec. 31st, 1927, and on Jan. 10th and 24th, 1928, yielded a Gram-negative diplococcus which from all its characteristics appeared to be the meningococcus. It was agglutinated by meningococcal serum, group 4. The blood culture was sterile on Feb. 26th, after the patient had been afebrile for 14 days. Lumbar puncture was performed on Nov. 30th. The fluid was clear, not under excessive pressure, and on microscopic examination showed no cells or organisms. There was no excess of protein and the cultures were sterile.

A blood count on Nov. 17th showed : 4,800,000 erythrocytes and 5850 leucocytes per c.mm. ; hæmoglobin, 72 per cent., and a colour-index of 0·75. A differential count of the white cells showed : polymorphonuclear leucocytes, 58·5 per cent. ; small lymphocytes, 30 per cent. ; large lymphocytes, 8 per cent. ; and large hyalines, 3 per cent. The Wassermann reaction in the blood on Nov. 23rd was negative. The urine remained clear throughout.

An autogenous vaccine was prepared from the organisms from the blood culture and was given as follows : Dec. 16th, 25 minims ; 22nd, 25 minims ; 30th, 50 minims ; Jan. 14th, 100 minims. No reaction followed any of the injections.

CASE 2.—A shop errand boy, aged 15, was admitted to the London Hospital on Nov. 17th, 1927.

History.—For the preceding two months he had had a rash which had first appeared on his chest and had spread after one week to his limbs. It had gradually cleared from the body, but remained on the limbs. It had consisted of rose-red, non-irritating spots up to 1 cm. in diameter. He had not felt well in himself but had remained at work until one week before, when he had had a sore-throat and been in bed for one day. Four days earlier he had begun to have pains, moving from joint to joint, starting in the ankles, and then going to the knees and wrists. There had been no swelling of the affected joints. His appetite had remained good throughout and his bowels normally opened. There was no history of any discharge from the ears, nose, or penis, and no headaches or shivering attacks. He had had " fits " when a baby up to the age of 3 years. From this age onwards until he was 9 years old his eyes had given him trouble, for which he had attended a hospital and had injections for treatment. His mother and father were alive and healthy and there were five other healthy children.

On admission he appeared a rather pale, definitely ill-nourished lad, with a white-coated tongue. Each eye showed scars of central corneal ulcers, and there was a certain amount of catarrhal conjunctivitis. There was no evidence of congenital syphilis. The tonsils were slightly enlarged but not infected. There was a rash on the arms, legs, and thighs consisting of a sparse, diffuse papular eruption, the spots being slightly raised rose-pink papules up to 1 cm. in diameter. None was purpuric and they were not irritating or painful. There were no spots on the face or trunk. There was pain on movement of the knees, ankles, and wrists, but no swelling or redness. There were no rheumatic nodules. The spleen was not palpable, and there was nothing abnormal in the abdomen, heart, or lungs.

Course of Illness.—He had a temperature of 101° F. on admission, but this came down within three days and remained normal for four days. For the following four days he had a swinging temperature—98° F. in morning and up to 103° F. at night—culminating in a rigor on the evening of the tenth day after admission. There was a swinging temperature for the next ten days (up to 102·5° F. at night), and it then settled to normal at the beginning of the fourth week after admission (the twelfth week of the disease). There was no further pyrexia. The pulse-rate varied between 70 and 86, and the respirations averaged 20 per minute throughout. The rash on the face and limbs disappeared within three or four days with the fall of temperature, and at this time he appeared quite well in himself. Within a week increasing temperature at night was accompanied by a fresh crop of papules on the limbs and face and a few on the buttocks and back. The rigor on the twelfth day was followed by a third crop of papules—the last to appear—and these faded gradually and disappeared within ten days. Throughout the pyrexial period the patient remained well in himself, would sit up in bed, amuse himself by drawing, and talk and joke with the others in the ward. A few hours before and after the rigor he was quiet, went off his food, and lay listlessly in bed. The joint pains that were present on admission disappeared in three to four days and no definite joint pains were noticed after this. On Dec. 6th (the twentieth day after admission) he had quite a severe backache which lasted all day and radiated downwards to both thighs. There was some pain on movement of either hip-joint. The heart remained clear throughout and the spleen was never palpable. A few days before he was discharged he developed a phlyctenular ulcer at the edge of the left cornea. Otherwise he was well.

No treatment by drugs or vaccines was attempted.

The following *investigations* were carried out.

The blood culture on Nov. 25th, 1927, yielded a Gram-negative diplococcus identical with that obtained from the first case. On Dec. 20th (after the patient had been afebrile for ten days) the cultures were sterile.

On Nov. 30th lumbar puncture gave a clear fluid, not under pressure. It contained no cells or organisms and the cultures were sterile.

A blood count on Nov. 25th showed 4,900,000 erythrocytes; a hæmoglobin percentage of 78; a colour-index of 0·79; and 12,400 white cells; of which 66 per cent. were polymorphonuclear leucocytes, 21 per cent. were small lymphocytes, 5 per cent. were large lymphocytes, 6 per cent. were large hyaline, and 1 per cent. were eosinophils. The Wassermann reaction on Nov. 22nd was negative. The urine was clear throughout the illness.

The symptoms and physical signs in the two cases were closely similar in all important respects. Also, the course which the disease pursued was almost identical in both boys. In both the blood culture grew typical meningococci during the height of the disease, and in both the cultures became sterile as the disease subsided. In neither was there any alteration in the cerebro-spinal fluid, nor were any organisms found in it, while in no single symptom was meningeal involvement suggested. There was nothing pointing to any other infection or localisation of disease. It is thus reasonable to suppose that the symptoms and physical signs present were due directly to meningococcal septicæmia and to this alone.

The Clinical Picture.

The signs and symptoms in each case formed a clinical picture different in many essential respects from that shown by other septicæmias. As there was no involvement of the central nervous system, neither clinically nor bacteriologically, and no other signs usually associated with the ordinary meningococcal infection—i.e., meningitis—one is justified in regarding this condition of subacute meningococcal septicæmia as a well-differentiated disease, running a definite course. Arguing from the close similarity of these two cases, one obtains the following picture of the condition.

The onset is insidious, and the first indication that a grave disorder is present may be the swinging temperature, which is remittent in character, with a daily variation of 5 or 6 degrees Fahrenheit or less. Rigors may occur. Apparently the temperature continues for a few months—in one case it was three months, and in the other four and a half—finally, becoming normal as the other symptoms subside. Probably the most striking feature is the relatively very good general condition of the patient. With such a temperature one would expect the general condition to be definitely bad, but both these patients were bright, lively, and cheerful throughout, and there was no "ill-look" about them. The rash seems to be fairly characteristic, but in some respects resembles erythema nodosum. The distribution is peculiar, being almost confined to the limbs and face. The spots are scattered, rose-red papules, appearing in crops usually corresponding to extra high "peaks" in the temperature chart. They are non-irritating and disappear without leaving any discoloration. The joint pains are transitory, not very severe, and unaccompanied by any physical signs in the joints. They occur in any of the large joints of the limbs, passing from one joint to another and not remaining more than a few days in any one joint.

In all these particulars these two cases exhibit similar symptoms and follow similar clinical courses to the cases of subacute meningococcal septicæmia recorded by other observers.

Conclusions.

1. Subacute meningococcal septicæmia, when uncomplicated by metastases, gives a clinical picture which is peculiar to the condition, forming a definite clinical syndrome.

2. It is characterised by: (*a*) remittent fever, lasting from a few weeks to several months; (*b*) a rash, consisting of small papules which come out in crops, especially on the limbs and face; (*c*) joint pains, moving from joint to joint, appearing with a rise of temperature and disappearing during defervescence; (*d*) absence of physical signs; (*e*) relatively extremely good general condition of the patient; (*f*) an excellent prognosis.

3. Meningeal infection need not occur during a meningococcal septicæmia of this type.

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ST. MARY'S HOSPITAL.—It is pointed out in the annual report that the recent extension has necessitated the employment of a larger number of nurses, and that since there is no room for them they have been temporarily housed in the isolation ward. The need of additional accommodation for the nursing staff is consequently urgent. There are now 302 available beds, 263 of which during the past year were constantly occupied. The 4575 in-patients stayed an average of 22 days, and cost £14 10*s.* 6*d.*; there were 46,446 new out-patients, who cost 6*s.* 1*d.* each. The tuberculosis dispensary continued to do good work; there were 231 new cases.

THE THERAPEUTIC VALUE OF IRRADIATED MILK IN THE TREATMENT OF RICKETS.

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With a Radiological Report by
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PROGRESS in our knowledge of the ætiology of rickets in the past few decades may be briefly summarised as follows. Dr. Palm in 1890 published a memoir in which, on the strength of observations made on the frequency of rickets in Edinburgh, contrasted with its incidence in sunnier climes, he suggested that rickets was due primarily to lack of sunshine. Little attention was paid to this view, the suggestion being lost sight of until quite recently, In 1919 Huldschinsky published a paper on the cure of rickets by means of the artificial alpine sun. This was followed by numerous papers at home and abroad confirming Huldschinsky's results. In 1926 Huldschinsky wrote as follows:

"The sunlight of which our children are deprived through our narrow alleys and sunless streets must be given them in the form of artificial alpine sun. The necessity is great and urgent that every child, whether manifesting symptoms of rickets or not, should undergo irradiation treatment for at least a month during its first year. The expense incurred will be amply repaid by the improvement of the whole nation."

Prof. H. Steenbock, of Wisconsin University, discovered a method of putting sunlight into cereals, milk, and other food products. Dr. Alfred Hess, of New York City, applied this clinically with milk and recorded notable results from its use in rickets. The unfavourable taste of the milk after irradiation was a deterrent to this method being employed to any extent. Within the last three years, however, important improvements have taken place in the method of irradiation, and there are now several processes which can irradiate milk successfully without injuring its flavour. Prof. K. Scheer, of the Children's Clinic, Frankfurt, using the "Scholl" system, has recorded striking results from the use of irradiated milk in the treatment of rickets. Scheer's results have been fully confirmed by numerous German writers, with the result that various municipalities in Germany have made provision for the supply of irradiated milk in their areas. Scheer pointed out that irradiated milk has the great advantage over various commercial products that there is no need for concern regarding weakening of the antirachitic principle with keeping since the milk is always consumed in a fresh condition. To quote Scheer's words: "The outstanding advantage over all other methods in my opinion and the reason why I have given such long and intensive consideration to this question, lies in the possibility of prophylactic treatment of rickets."

So far as we are aware, the strikingly favourable results recorded by numerous German workers from the use of irradiated milk have never been challenged, although a note of warning has often been sounded about the possible injurious results of excessive or indiscriminate use of irradiated milk and various irradiated medicinal products, more especially in children. With the exception of a few isolated and inconclusive observations, little or no attention has been directed to this subject by clinicians in this country, and in the past six months we have carried out a series of observations with the object of confirming or otherwise the results recorded by German authorities.

Methods of Irradiation.

There are at least five recognised methods of irradiation, known by the name of Scholl, Scheidt, Buhtz, Wamoscher, and Vita ray lamps. In the Scholl system the milk is irradiated in an oxygen-free atmosphere, the oxygen being removed by admixture with CO_2 gas. The milk is irradiated in a water-cooled chamber, the ultra-violet rays being furnished by a quartz mercury-vapour lamp, the milk, in a very delicate film, flowing over a surface 3 inches from the lamp. The time of exposure to the rays is 45 seconds. The taste of the milk is slightly modified, giving the impression that a little soda-water has been added. Its physical properties seem to be also slightly modified; it appears to be somewhat thinner than the untreated milk. This is apparently due to some alteration in the fat globules of the milk. The bacteriological content of the milk was found on frequent examination to be reduced by about 70 per cent.

In Scheidt's apparatus the milk runs from the bottom to the top directly the length of a long quartz tube. For the production of the ultra-violet rays a high-tension electric current is used, which is sent through a vacuum pipe filled with argon gas. With the Scheidt process the irradiation takes place in the cold, and it is therefore spoken of as "the cold process." The flavour of the milk is unaltered.

Our experience is limited to these two forms of apparatus. Milk is successfully irradiated by both these processes. In the first series of 12 cases treated, which form the basis of the present communication, the irradiation was effected by the Scholl apparatus; in a subsequent series no less favourable results followed the use of "the cold process."

Clinical Observations.

A series of 12 cases was selected, six of which were treated in the wards of the Royal Infirmary, while the remaining six were in-patients in the Victoria Children's Home, a part of the child welfare scheme of the Edinburgh Corporation. The ages of the children ranged from 2 to 5 years. Of the last six, four were selected as being specially suitable for the test, from the fact that they had been under indoor treatment for periods ranging from three to five months, and had proved unusually refractory to treatment, which had included, in various combinations, ultra violet rays, ostelin, irradiated ergosterol, and irradiated cod-liver oil. These four cases provided a useful control, as the milk supplied to the home is high-grade milk from the tubercle-tested herd of the Corporation. While the general conditions and the condition of the joints of these four children had undergone improvement, their progress had been disappointing, the radiological appearances of one of them, after five months' treatment, being indicated in Fig. 7.

All the 12 cases were good examples of pronounced rickets; eight of them were treated de novo, the other four, as stated, having been under skilled hospital treatment for a considerable period before the administration of the irradiated milk. In these four cases all the medicinal and other special antirachitic measures in use were stopped, the same diet being continued, with the exception that 6 oz. of irradiated milk replaced 6 oz. daily of the unirradiated high-grade milk in previous use. The dietary in these four cases included 18 oz. of milk daily, the proportion of irradiated to unirradiated milk being 1 in 3. In the remaining eight cases milk entered more largely into the dietary, 36 oz. of milk being given daily, of which one-half was irradiated. The irradiated milk was supplied from the milk of a Certified milk dairy, the irradiation being carried out under the personal supervision of one of us. Frequent radiological examinations were made at short intervals, a standardised technique being employed to eliminate, so far as possible, all experimental error. Attention was directed mainly to the condition of the wrists, knees, and ankles.

Rapid improvement took place in the condition of the joints, occurring uniformly in all the cases treated.

Within 14 days of starting to give irradiated milk it was clear that a remarkable curative influence was at work. In cases of moderate severity radiological evidence of cure was obtained within four to six weeks, and in extreme cases within six to eight weeks. The manner in which the disorderly growth of the cells and imperfect ossification characteristic of rickets gave place to orderly growth and a normal radiographic appearance was surprising. An all-round improvement in the general condition accompanied this change, this being evident by increased muscular tone and activity, and improvement in the mental state of the children. Within seven weeks of the commencement of treatment it was possible to give a demonstration (in the Radiological Department of the Royal Infirmary) of the results of the treatment, which carried conviction to all who saw it. A general impression of the rate of progress may be gained from the series of illustrations appended. A short account of the radiographic findings is here given, after which two illustrative cases are recorded in some detail.

Radiological Report by Dr. King.

The pathological changes occurring in the bones in rickets lend themselves very readily to demonstration by X rays, and it has long been recognised that the efficacy of any form of treatment may well be gauged by the degree of improvement as shown radiologically.

The pathological process at the growing ends of the long bones is essentially an abnormal vascularisation of the epiphyseal cartilage, with a resulting aberrant deposit of calcium throughout the so-called "osteoid" tissue. It is found that in a florid case of active rickets the clear line representing the epiphyseal cartilage is several times the normal width, and that throughout this cartilage there are numerous fine irregular striæ. The metaphysis, instead of showing a regular line of increased density immediately adjacent to the epiphyseal cartilage, has an irregular flocculent appearance; and, as the changes are most marked towards the centre of the bone, there is frequently a degree of "cupping." This latter deformity is usually most marked at the distal end of the ulna. In cases where treatment has been delayed there may be bowing of the long bones, but this is of little interest here as being less amenable to medical treatment.

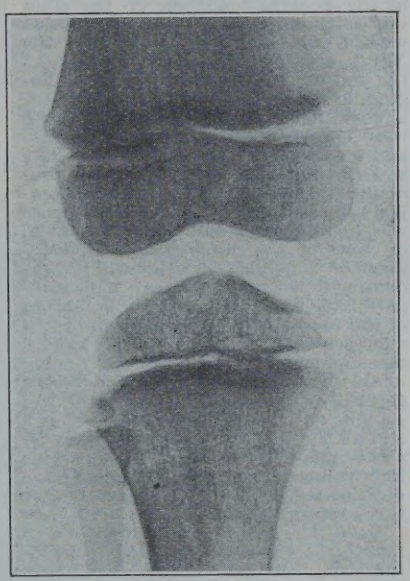
Fig. 1.

Case 1.—Rickets in a child aged 5.

A very large number of studies have been made of the process of healing under various forms of antirachitic treatment, and it is not intended here to go into this in detail. It will suffice to point out that within 14 days of the commencement of treatment by irradiated milk there was a perfectly definite clearing of the epiphyseal cartilage, and that the metaphysis showed an increase in regularity, with early signs of the formation of the band of sclerosis already referred to as being a constant feature of healthy bones. The illustrations given show the improvement after one month's treatment (Figs. 3–8). The diminution in the width of the epiphyseal cartilage will also be noticed.

The active and previously untreated cases are the most readily followed in their improvement. Considerable difficulty arises in forming a comparions with any other form of antirachitic treatment, since it is desirable to compare only cases of similar age, severity of disease, and previous treatment. In can, however, be stated that the rate of improvement under irradiated milk is, from a radiological point of view at least, greater over any given period of time than that observed under other forms of antirachitic treatment. Moreover, as is mentioned elsewhere, there was marked radiological evidence of improvement in several cases which had been found abnormally resistant to modern antirachitic measures.

Fig. 2.



Radiogram of knee-joint in healthy child aged 5. Note clear epiphyseal line, with regular dense metaphysis.

Brief mention may be made of the physical properties of the milk. Earlier observers found that after irradiation, milk and other foodstuffs not only acquired therapeutic power but also possessed a degree of photo-activity. They further found, however, that these two properties were not necessarily concomitant, for if the irradiation was done in an oxygen-free atmosphere there was no loss in the therapeutic value, but, in the case of oils at least, no photo-activity was developed. The greater part of the work on this subject has been done on the continent, and it may be pointed out that the photo-activity is more probably due to some chemical action than to the actual emission of radiation. Experiments were done with the milk here used and no evidence of photo-activity was found, this bearing out from isolated observations the previous experiences of others.

Illustrative Cases.

The records of two cases may be given in some detail; these sufficiently indicate the details of dietary and other treatment.

Case 1.—A photograph is given (Fig. 1) of one of the most severe cases—the patient being a child, aged 5, treated in the wards of one of us in the Royal Infirmary. He was unable to stand or walk; he had never walked; he had not learned to speak, and he had never been known to smile. On four different occasions he had been treated for a lengthy period in the Royal Hospital for Sick Children for rickets. The general condition is well revealed by the photograph, which, however, gives an inadequate idea of the severity of the curvatures of the limbs. For the first few weeks the treatment was restricted to rest in bed in the ward, and the following dietary:—

(*a*) For first three days: Ate little. Diet selected from 1 pint of milk, of which 1 part in 6 was irradiated. Rusks (wholemeal bread), half an egg, orange-juice, and a little porridge.

(*b*) Four subsequent days: 36 oz. milk of Certified standard, of which one-third was irradiated; otherwise as above.

(*c*) 2½ weeks: 36 oz. of milk (half of it irradiated); otherwise as above.

(*d*) After (*c*): 36 oz. of milk continued as in (*c*). A little meat added in form of fish, chicken, tripe, also potato, and occasionally turnip and apple.

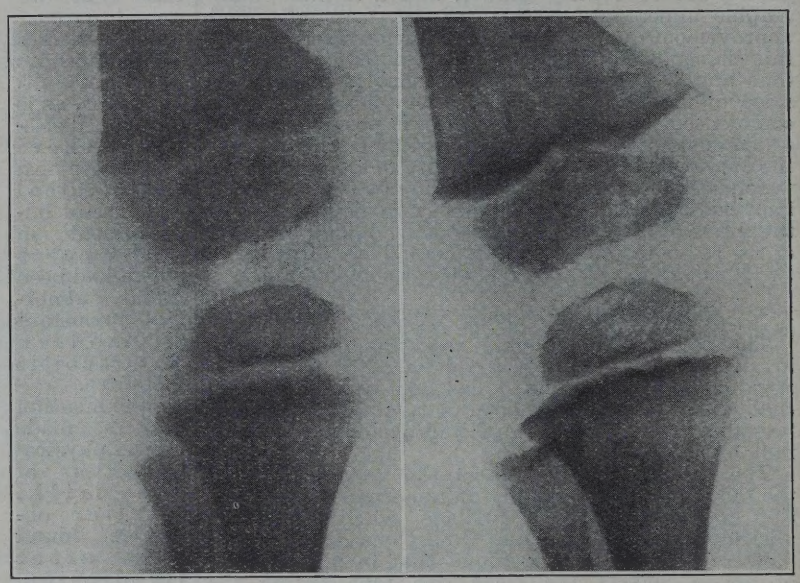
No medicinal or other measures were employed, with the exception of an occasional mild laxative medicine (syrup of figs) to counteract the slightly constipating tendency of the dietary. For the first few days little food was taken owing to gastric disorder. The extreme muscular feebleness of the child precluded the necessity of any measures being required to ensure rest to the limbs. The radiographic appearances were those of advanced florid rickets.

Within a fortnight the improvement in the general condition of the child was striking, this being associated with a notable improvement in the X ray appearances of the limbs. At the end of six weeks, when the radiographic appearances of the joints were almost normal, additional measures were employed in the form of splints and massage to keep the child at rest and favour correction of the pronounced curvature of the limbs. Complete elimination of the severe curvature was not effected, and it is probable, in view of the unfavourable environment of the child, that this will not be obtained without surgical assistance at a later date. A remarkable feature of the case was the coincident improvement which took place in the mental development of the child. From being unable or unwilling to speak and being generally inanimate, the power of speech, an interest in his surroundings, and all the mental traits of the average child manifested themselves. This improvement in the psychological state did not noticeably develop until after three weeks' treatment.

CASE 2.—This is recorded as one of four cases selected as specially suitable for the investigation. He had been an in-patient in the Victoria Home for five months for the treatment of rickets, but had proved unusually refractory to treatment, the general condition of the child and the radiographic appearances of the joints being still unsatisfactory, and the lesion still active. Besides a careful antirachitic dietary, which included 18 oz. of high-grade milk and orange-juice daily, a course of various special antirachitic remedies had been given. This included irradiated ergosterol (95 tablets), ostelin (8 oz.), exposure to ultraviolet rays, &c. All medicinal and other special measures of treatment were stopped, the dietary in use was continued with the exception that 6 oz. of irradiated milk of Certified standard replaced 6 oz. of the Grade A (tuberculin tested) milk ordinarily supplied to the home.

Under this regimen an improvement in the clinical condition was striking and rapid. The favourable influence of the treatment is indicated in Figs. 7 and 8. Fig. 7 illustrates the condition of the wrists after five months' indoor treatment, before the administration of the irradiated milk was begun. Fig. 8 depicts the same joint after four weeks' treatment with irradiated milk. The radiographic appearances were then practically normal, the clinical condition having proportionately improved.

FIG. 5. FIG. 6.



Case of rickets before and after one month's treatment with irradiated milk. The change from the very indefinite and irregular metaphysis to the normal regular dense line is well shown.

It is noteworthy that this recovery (and similarly in the other three cases) was effected merely by substituting 12 pints of irradiated milk for 12 pints of milk of similar quality unirradiated, all medicinal and other special therapeutic measures being withheld. It is important to note that the cost of the special irradiated medicinal products (excluding ultra-violet rays) administered in the previous five months—with very restricted success—would be, at retail rates, approximately 18*s*. As our experience leads us to believe that there could be no justification for the price of irradiated milk exceeding that of unirradiated by more than 1*d*. per pint, the total cost of the special treatment—and of the recovery—over the four weeks' period was 1*s*. On the economic side, therefore, the advantage lies markedly on the side of treatment by irradiated milk.

FIG. 3. FIG. 4.

Case of florid rickets. Note the wide epiphyseal lines with irregular striation throughout the cartilage. There is also typical "flaring" of the metaphysis with irregularity of the edge. Fig. 4 shows the condition of the same bones after one month's treatment with irradiated milk. Note the rapid approximation to the appearance of a normal joint.

A Word of Caution.

A word of caution is necessary about the use of irradiated milk. It is essential, in view of its profound influence on the growing bones, to keep in view the possibility of overstimulation leading to premature ossification. This danger can be easily avoided. With our present limited knowledge it is, in our opinion, essential that irradiated

milk should not be considered a complete substitute for good fresh milk. In a series of adult subjects to whom we administered the milk to the extent of 3 pints daily over a period of six weeks no untoward symptom of any kind was observed. In view, however, of various experimental results that have been recorded in animals from the use of highly irradiated products, in the form of abnormal calcification in the cardiovascular and renal systems, the milk should be used with care and discrimination. It may be accepted, beyond any possibility of doubt, that the recent discovery of the value of properly irradiated milk is one of very far-reaching importance alike to the practitioner, the physiologist, biologist, and the student of nutrition generally. The question of the standard of irradiation, and the possibilities of its application in conditions other than rickets, may be briefly referred to.

Standards.

In this country irradiated milk can only be sold under license from the patent holders. Under this arrangement the licensees agree that "their irradiated milk shall not contain less than two (2) ostelin (vitamin D) units per gramme of butter-fat as determined by the pH drop test under conditions laid down in the papers by Jephcott and Bacharhach (*Biochem. Jour.*, 1926, xx., 1351, and 1928, xxii., 60), or alternatively eight (8) Pharmaceutical Society's units per gramme of butter-fat as determined by the line test employed by the Pharmaceutical Society." With fuller knowledge time may show that these tests may require modification. We have at present no assurance that the butter-fat supplies a complete and reliable guide. The material point for the profession and the public at the present time, however, is the fact that under the existing standards milk can be successfully irradiated so as to impart to it a very valuable additional therapeutic property in the prophylaxis and cure of rickets. A further question that naturally arises is the possibility of irradiated milk proving of value in conditions other than rickets. While no authoritative statements can be made on this subject it may be useful to indicate some directions in which evidence may reasonably be looked for.

FIG. 7. FIG. 8.

Wrist of child aged 3. After five months' hospital treatment, rachitic changes are still present in Fig. 7. Note "cupping" of the ulna. In Fig. 8, after one month's treatment with irradiated milk, no rachitic changes are detectable.

Irradiated Milk in the Treatment of Other Disorders.

In the past few months a series of observations have been made on the feeding of children in the Craiglockhart Parochial Hospital, Edinburgh, under the direction of Dr. R. W. Dawson, resident physician. The cases observed showed the very severe malnutrition commonly seen in patients in these institutions. The results, more especially in the case of children over one year old, have been very gratifying, the gain in weight and improvement in the general condition of the children having been very satisfactory. The possible value of irradiated milk in the treatment of various disorders of pregnancy and lactation, associated with derangements in calcium metabolism, has been referred to in medical literature, but adequate data on the subject are still lacking. Through the kindness of Mr. F. E. Jardine, surgeon in charge of the special sanatorium under Edinburgh Corporation for the treatment of tuberculosis and other disorders of an orthopædic classification, we have had an opportunity of testing the effects of irradiated milk in a series of four cases of advanced tuberculous disease of the knee-joint of three to five years' duration. The favourable results obtained have been very striking. These amply justify the recommendation that a thorough and prolonged investigation should be made in this direction. To this end it is, in our opinion, desirable that the whole subject should be investigated under the ægis of a specially appointed scientific body, whose opinions and recommendations, on scientific and clinical questions, would commend themselves to the profession.

Conclusions.

1. The claims of numerous German writers concerning the value of irradiated milk in the prevention and cure of rickets are amply confirmed. 2. Irradiated milk should not be regarded as a complete substitute for good fresh untreated milk. 3. In rickets, between 2 and 5 years of age, excellent results have followed its use when the milk has been used in strengths varying from 1 part irradiated to 2 parts unirradiated, up to equal parts of the two preparations. 4. The cure of the disease is established more quickly, effectively, and economically by the use of irradiated milk than by various irradiated commercial preparations. 5. There are indications that irradiated milk may prove of outstanding value in the treatment of certain disorders other than rickets—notably disorders incidental to pregnancy and lactation, the climacteric, malnutrition, injuries and surgical diseases of bone, and certain forms of tuberculosis. 6. There is need for the establishment in this country of a scientific body to initiate and direct the work, both on its strictly scientific and clinical sides, called for by these new facts about nutrition, and the influence of ultra-violet rays upon it.

We have pleasure in expressing our indebtedness to Dr. Woodburn Morison, of the Radiological Department of the Royal Infirmary, Edinburgh, for his cordial coöperation and assistance; also to the British Hanovia Quartz Lamp Co. (Scholl apparatus), and Food Irradiation Co. (Scheidt apparatus), for their courtesy in putting apparatus at our disposal for the investigation.

THE board of management of Birmingham General Hospital have accepted the offer of an anonymous donor to establish a studentship in diabetic research of the value of £250 a year. The studentship will be held in connexion with the hospital's diabetic clinic.

Clinical and Laboratory Notes.

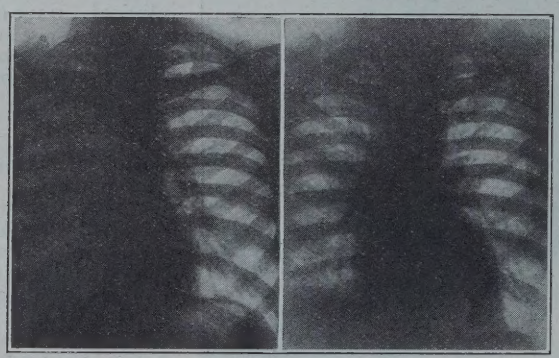
A CASE OF ADENOCARCINOMA OF BRONCHUS.

By L. S. T. Burrell, M.D., F.R.C.P. Lond.,
PHYSICIAN TO THE ROYAL FREE HOSPITAL AND TO BROMPTON HOSPITAL FOR CONSUMPTION.

THE patient, a man of 29, complained of pain on the right side of the chest, dyspnœa, cough, and sputum which was often blood-stained.

He dated the symptoms from an accident in November, 1928, when he broke a tooth, and it was thought that he might have a piece of broken tooth in a bronchus. On examination in April, 1929, no breath sounds were heard on the right side of the chest which was found to be completely dull, and the heart was slightly displaced towards the right side. A diagnosis of collapse was made, and this was confirmed by radiography (Fig. 1); but as no foreign body was seen the presence of a tumour was suspected. In May the patient was examined through a bronchoscope by Mr. V. E. Negus at King's College Hospital, and a red, rounded, smooth mass was seen projecting from the posterior wall of the right bronchus just above the orifice of the upper lobe bronchus into which it was sucked during inspiration. A lot of fœtid pus was aspirated, and the tubes cleaned in order to make subsequent operation more satisfactory.

FIG. 1. FIG. 2.



Collapse of right lung. Heart slightly displaced to the right.

The right lung has now re-expanded and the heart has returned to its normal position.

A few days later Mr. Negus again passed a bronchoscope, and painted the growth with cocaine and adrenalin. It now appeared as a mere bulge from the bronchial wall, but had a definite pedicle, and he was able to remove it with biting forceps, leaving the base as a small excoriated area. It was then possible to see clearly down the right lower lobe bronchus. The tumour looked like a soft fibroma, but on section it proved to be adenocarcinoma.

Radiographic examination ten days after the operation showed partial re-expansion of the right lung. The note on percussion was still impaired on the right side, but it was not dull and air could be heard entering the lung. The patient left hospital much improved and had very little dyspnœa. Fig. 2 shows the condition at the end of July, 1929, ten weeks after the operation. The patient was then free from all symptoms and felt perfectly well.

This case is similar to the one I published in THE LANCET (1927, ii., 1180), but in that patient the tumour was a simple fibroma, and when I last heard from her in May, 1929, she was quite well and had had no further symptoms since the tumour was removed. In the present case it is probable that the carcinoma will spread, although it is possible that the whole tumour has been removed.

The patient was referred to me by Dr. Malcolm Hutton, of Stamford, and I am indebted to him for permission to publish this paper, and to Dr. Ulysses Williams for the skiagrams.

A CASE OF CICATRICIAL STENOSIS OF THE ŒSOPHAGUS.

By Kenneth Heritage, M.B., F.R.C.S. Eng.,
LATE RESIDENT SURGICAL OFFICER, ANCOATS HOSPITAL; RESIDENT MEDICAL OFFICER, MILLER HOSPITAL.

THE following case illustrates the importance of œsophagoscopy as a means of diagnosis in œsophageal obstruction.

A married woman, aged 42, first attended Ancoats Hospital, Manchester, on March 9th, 1929, with a history of six days' complete œsophageal obstruction; she was unable to retain even small quantities of water. For two years previously she had suffered from progressive difficulty in swallowing—solids, meat, &c., having to be minced for her. Being of a rather nervous disposition this had been treated for a time by her doctor as a case of hysteria.

On examination I found an anæmic wasted woman, very weak, and scarcely able to walk. Her weight was 6 st. 2 lb., which was 2 st. less than it had been six months previously. Fluids and solids were returned unchanged from the œsophagus. Routine screening of the chest excluded thoracic neoplasm and aneurysm, and a barium meal revealed complete œsophageal obstruction at the level of the eighth thoracic vertebra. The Wassermann reaction was negative.

Before œsophagoscopy the patient had denied the possibility of having swallowed corrosives, but on going into the matter further with the relatives afterwards it was discovered that, at the age of 3, she had swallowed "lye" (caustic soda) in mistake for ginger-beer.

After combating the patient's dehydrated condition with subcutaneous and rectal saline I passed an œsophagoscope under general anæsthesia, and found, 20 cm. from the edentulous gums, a hard fibrous lip surmounting a pale white annular stricture. No foreign body was present. Complete obstruction was due to stenosis alone. With difficulty a filiform bougie was introduced under direct vision, and left in situ for several hours. The stricture was subsequently dilated with graduated gum-elastic bougies under direct vision, at three sittings under anæsthesia, and was shown to be solitary. Later, the patient having become accustomed to instrumentation, it was found preferable to pass the œsophagoscope without anæsthesia, by the method described by Abel,[1] and this has proved a good method of examination and treatment of this condition. She is now able to swallow anything and is rapidly gaining weight in consequence.

The case is unusual in view of the long period (37 years) between swallowing caustic in infancy—an event forgotten by the patient—and the onset of definite dysphagia two years ago. The complete nature of the obstruction when first seen is also noteworthy.

Treatment by gradual dilatation under direct vision through an œsophagoscope passed under local, or without, anæsthesia, forms in my opinion the ideal method of maintaining patency in the case of simple œsophageal stricture. "Blind bouginage" can only be condemned by the dictum of Trousseau, that "sooner or later all cases of stricture of the œsophagus die of the bougie." Other methods, such as those of Plummer and Tucker, demand the presence of a gastrostomy over a prolonged period in a patient who is able to swallow the thread guide.

I am indebted to Mr. F. Holt Diggle, from whose clinic this case is reported.

CHRONIC PARASITIC FUNICULITIS IN EGYPT.

By Dr. M. F. Sorour,
ASSISTANT PROFESSOR OF PATHOLOGY, FACULTY OF MEDICINE, CAIRO.

TEN years' experience in examining pathological material sent from Government hospitals all over Egypt has shown that chronic nodular masses, of varying size, are not uncommon lesions in the spermatic cords of the Egyptian fellaheen (peasants).

[1] Abel, A. L.: Œsophageal Obstruction, London, 1929, p. 39.
[2] Sewell, Lindley: THE LANCET, 1928, i., 1008.

These nodules vary in size from a hazel-nut to a pigeon's egg, and are, as a rule, painless, or only slightly tender. Two varieties of this condition have been met with, due respectively to two different parasites—namely, filaria and bilharzia.

(1) *Chronic Filarial Funiculitis.*—For many years I had received spermatic cord nodules, which, in sections, showed: Chronic fibrosis, with very heavy eosinophil cell infiltration, enclosing thickened walled blood-vessels, whose lumens were narrowed, or completely obliterated, by organised thrombosis. I named these lesions "chronic eosinophilic funiculitis"; and although no bilharzia, ova, or worms had been found in them, I suspected a worm infection. In 1927 I received a spermatic cord nodule from the Government hospital at Zagazig, which, on section, disclosed, besides the histological changes above described, a large lymphatic vessel cut very obliquely, show layers of endothelial proliferation, containing many multinucleated cells. In its lumen was an intact filaria worm, cut in many places and directions. In the very oblique, almost longitudinal, sections of the worm were ova and embryos.

The worm was surrounded by a heavy cellular mass of endothelial cells, many polynucleated cells, and eosinophil cells. At one end of the obliquely cut lymphatic were filaria embryos lying intermixed with the cellular elements surrounding the worm. In serial sections the same lymph vessel in its part beyond the worm was occupied by similar cellular contents much intermingled with filaria embryos apparently on their way to the blood stream. The long-standing suspicion thus confirmed, I went back to the old collected and preserved spermatic cord eosinophilic nodules, and on serial sectioning found, in each case, direct evidence of filarial infection, either in the form of intact filaria worm; or of degenerated worm inside a fibrosed lymph vessel; or of lymph vessels obliterated by endothelial and eosinophil cells with filaria embryos amongst them; or of calcified remains of the worm. These findings established, for the first time, the existence of *chronic filarial funiculitis* in Egypt. I think that the acute endemic funiculitis which occurs in Egypt and frequently goes on to suppuration is engrafted on a chronic filarial lesion. The analogy is with the acute febrile inflammatory attacks which occur repeatedly in the course of chronic elephantiasis of leg, scrotum, and breast.

(2) *Bilharzial Funiculitis.*—This, the second type of parasitic funiculitis met with in Egypt, is due to

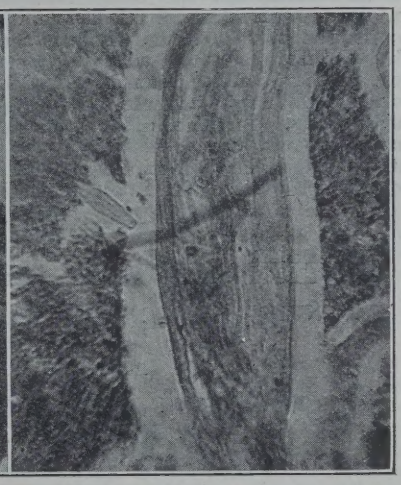
1

Lymphatic vessel containing filaria worms, cut in different situations and directions, and surrounded by a cellular mass.

2

Filaria worms in lymphatics from another case.

3

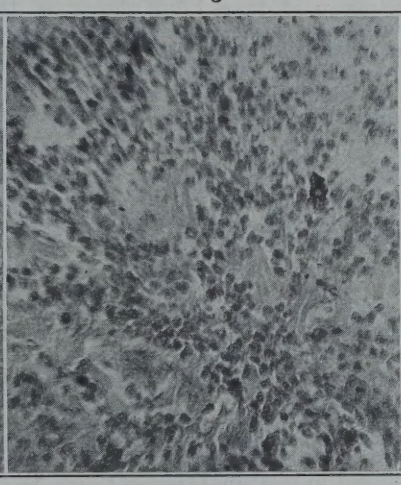


High magnification of part of filaria worm, showing embryos inside the mother worm.

4

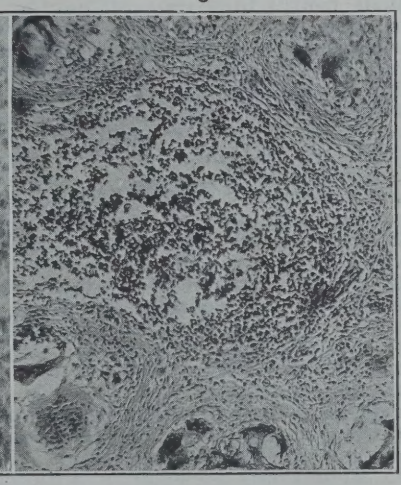
Remains of degenerated worm inside fibrosed, obliterated lymph vessel, in a chronic case.

5



Heavy eosinophil cell infiltration in tissue of a nodule from an early case of filarial funiculitis.

6



Bilharzial funiculitis showing heavy eosinophil cell infiltration, and many bilharziomata with ova and giant cells.

lateral spined, or to terminal spined, or to both kinds of ova lying in the tissues of the spermatic cord. The lesions are characterised by round, oval, or cord-like hard fibrous tumours, easily shelled out from the surrounding tissue. Histologically they consist of fibrous tissue densely infiltrated with eosinophil cells, and with many bilharziomata embedded in the mass. The bilharziomata are small, tubercle-like structures, consisting, when recent, of one or two central bilharzia ova, surrounded immediately by huge giant cells, and peripherally by layers of large endothelioid cells. In older bilharzioma the outer endothelioid layers are replaced by hyaline fibrous tissue, which may increase concentrically until the whole is a mass of whorls of hyaline fibrous tissue, with the central ova calcified, or, the ova having been devoured by the giant cells, only a chitinous capsule or spine remains to tell the story. In the older lesions the eosinophil cells become few or vanish from the fibrous tissue surrounding the bilharziomata, with the death of the ova which invited and maintained their presence.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

(*Continued from p. 665.*)

SECTION OF PATHOLOGY AND BACTERIOLOGY.

TUMOURS OF THE INTESTINE.

WITH Prof. J. S. DUNN (Manchester) in the chair, a discussion on the Relation of Malignant Disease to Benign Tumours of the Alimentary Tract was opened by Prof. MATTHEW STEWART (Leeds). He drew attention to the frequency of the casual finding of such benign tumours post mortem, many of them of little importance per se, but a few being attended with serious complications. Such tumours he classified into (1) connective tissue, (2) epithelial. The first group consisted of lipomata and leiomyomata. The former were rare and of small size; the variety occurring in the stomach was submucous while those of the intestine were usually subserous. Leiomyomata were more common and were flat and button-like. These latter occasionally became sarcomatous, but whether the tumours were innocent at first with subsequent malignant degeneration or whether they were sarcomatous from the outset was difficult to determine. Myosarcoma was more frequent in the stomach than in the intestine.

The epithelial tumours, said Prof. Stewart, were of much greater importance. They were usually adenomatous with a tendency to become polypoid and might attain a very large size. Their polypoid form was believed to be due to the mechanical action of the gut, and the pedicle was often quite definitely not composed of tumour tissue. He suggested that the submucosal thickening which occurred in relation to these tumours was mechanical rather than inflammatory. Other simple epithelial tumours described were adenomyomata and pancreatic heterotopia. There is no evidence, said the speaker, that either of these is specially liable to malignant change. With regard to adenomatous polypi, Dukes had found such tumours in 25 out of 33 consecutive surgical cases of carcinoma of the rectum. In the case of the stomach there was also a growing tendency to associate malignant with benign tumours. Analysing 11,000 autopsies at Leeds Royal Infirmary, Prof. Stewart found 47 cases of polypi of the stomach and about a quarter of these were associated with carcinoma. The total number of cases of carcinoma of the stomach, however, in these post-mortems was 263, so that only 4·9 per cent. were associated with polypi. Although polypi must be accepted as precursors of malignant disease of the stomach in a small percentage of cases, the association was much more intimate in the large intestine.

The speaker next reviewed the criteria of early malignancy in gastro-intestinal polypi. Invasion of the muscularis mucosæ he considered the most important single phenomenon. In earlier cases where there was only irregularity and de-differentiation of cells the diagnosis was more difficult, but such cases must be regarded with grave suspicion. Carcinoid tumours occupied an intermediate position between the simple and malignant. They were locally infiltrative, but never developed the characters of frank carcinoma. A review of the experimental results of many workers revealed very little of positive value concerning the point under discussion. Ishibashi and Otani (1921) had produced papillary adenomas in the stomach of animals by means of submucous injections of tar. Leitch had obtained negative results by injection of tar per rectum. Menetrier had succeeded in producing squamous carcinoma in the stomach of a rat by administration of tar, while Schabad had obtained negative results in mice with similar experiments.

Prof. ARCHIBALD LEITCH (London) described four cases of benign tumour of the small intestine, but on account of the extreme infrequency of malignant tumours in this situation he considered the relationship between innocent and malignant tumours here was hardly worth discussing. In the case of the large intestine the number of museum specimens kept to show benign and malignant tumours occurring together tended to produce a wrong conception of the importance of benign tumours as precursors of cancer. In experimental work and in the study of cancer in various parts of the body it had been shown that simple tumour formation occurred in numerous foci with only one or a few of these becoming malignant. He would like to believe that such a condition occurred in the intestine, but observation on a large number of cases of carcinoma of the colon led him to think that such a process was quite uncommon. He doubted the importance of the extremely small papillomata so often described, and he believed that such tumours should be neglected in an observation of this kind. Lack of controls greatly reduced the value of many observations. When, however, there were definite adenomata in the intestine there was a great tendency for these to become malignant. He was unable, however, to support Dukes's theory of retrogression. In his experimental work Prof. Leitch had used tar and the products of putrefaction with negative results. His general conclusion was that the case had been overstated and that in reality benign tumours were of little importance as precursors of cancer in the large intestine, although when adenomata do occur there is a great tendency for them to become malignant.

Dr. CUTHBERT DUKES (London) described the last 75 cases of cancer of the colon that he had examined. He classified these into (*a*) those in which malignant growth had infiltrated the submucous coat but had not reached the muscle coat; (*b*) those in which the muscle coat was invaded but without spread by direct continuity into the perirectal tissues; (*c*) in which spread had occurred into the perirectal tissues. In group (*a*) was only one tumour and this was associated with papillomata. Group (*b*) consisted of 18 tumours, half of them being associated with papillomata which were only present in less than a third of the 56 cases in group (*c*). Dr. Dukes concluded that papillomata are more common in early than in late cases of cancer. The speaker suggested that the rarity of occurrence of papillomata in group (*c*) could only be explained by the supposition that some sort of immunity developed as a result of cancerous invasion, and this led to a retrogression of the epithelial proliferations in the immediate neighbourhood. The frequency of papillomata in early cancer lent support to the view that adenomatous polypi preceded cancer of the rectum. Indeed in cases of familial polyposis of the intestine this almost invariably occurs. The diagnosis of papillomata was made only when these were visible at first glance and when several were present. Cases in group (*a*) were characterised by epithelial

proliferations heaped up above the surface of the surrounding mucous membrane, whereas in group (*c*) the cases had excavated ulcers with raised margins. Group (*b*) cases were intermediate between these two. These were not different types of growth but different stages in the development of malignant growth. In the early stages epithelial proliferations projected into the lumen of the bowel and the tumour had the structure of an adenoma or villous papilloma. The onset of malignancy was marked by invasion of the submucosa and this was followed later by ulceration. If the tumour was removed before there was evidence of invasion it would be classified as an adenoma, if after invasion as a carcinoma. Thus, in the precancerous or pre-invasive period the epithelial proliferations in carcinoma and adenoma were indistinguishable. It was not possible to express statistically the frequency with which cancer developed in a pre-existing papilloma compared with its origin from a flat region of the mucous membrane, but malignant degeneration of an adenomatous polyp was met with commonly, and the earliest cancers in museum collections were usually of this type. Dr. Dukes concluded that adenomata and carcinomata in the colon were often related phases in the incidence of malignant disease.

Dr. WILLIAM SUSMAN (Manchester) analysed and classified simple and malignant tumours of the alimentary canal found in 883 autopsies at Manchester Royal Infirmary. In 38 cases there were polypi of colon, associated in every case with hyperplasia of the mucous membrane. They were twice as common in males as in females and were found most frequently between the ages of 40 and 60. In some cases polypi were limited to one or other segment of the colon without there being any predominant distribution. In other cases polypi were distributed throughout the large intestine. Single polypi were present in nearly half the cases. In 17 of these 38 patients there was associated cancer; in 10 of them this was situated in the colon, 2 in the stomach, 2 in the œsophagus, and 3 elsewhere. The speaker concluded that polypi were definitely associated with malignant disease of the colon, and that the polypi underwent changes analogous to those observed in the skin of the mouse during tar treatment. Solitary polypi might and multiple polypi were very likely to be potentially malignant.

Dr. J. S. YOUNG (Leeds) pointed out that skatol and indol injected subcutaneously had been found to produce simple hyperplasia; since these substances were increased in constipation he suggested a possible relationship to tumour development. Dr. Young had also shown that bile-salts have a marked action in producing epithelial hyperplasia and this opened up another field for investigation.

Prof. STEWART summing up said that the speakers were agreed that papillomata of the colon were sinister manifestations and frequently developed into malignant tumours. There was some difference of opinion as to the relative importance of benign tumours in cancers of the intestine taken as a whole and it seemed that much depended upon the criteria of the diagnosis of polypi.

Dr. D. F. CAPPELL (Glasgow) read a paper on the

Reticulo-endothelial System as Studied by Intravitam Staining.

This system, he said, consisted of cells which were widely scattered throughout the body and possessed certain physiological properties in common. They were concerned in ingestion and storage of particulate matter and substances in solution as well as the phagocytosis of micro-organisms. They became prominent in certain pathological conditions, especially in cases of excessive blood destruction, when excess iron was stored, and in cases of perverted lipoid metabolism. The distribution of reticulo-endothelial cells might be determined by the injection into animals of various dye substances which were taken up by the cells. Particulate matter such as india ink was taken up rapidly while dyes in solution, such as trypan-blue, required to be present in the circulation for some hours before staining was intense. The distribution was described as (1) cells lining the vascular channels of the liver, spleen, bone-marrow, and lymph glands; (2) reticulum cells of the spleen, lymph glands, and bone-marrow; (3) histiocytes occurring in all connective tissue except that of the central nervous system; (4) a few mononuclear cells in the circulating blood. Vital staining might be applied to the study of cells occurring in inflammatory processes. Using a dye such as trypan-blue it was not possible in this way to distinguish histiocytes originally present in the tissues from macrophages which had entered the inflammatory focus from elsewhere, but by employing a blue vital stain before inducing an inflammatory process with a subsequent red stain when the lesion had developed it was possible to distinguish the original reticulo-endothelial cells from those which had subsequently developed the characters of phagocytes. It was possible also to recognise in an inflammatory lesion monocytes which were derived from the blood stream by previous injection of india ink, since these cells took up the black particulate matter. The method of intravitam staining could also be used, said Dr. Cappell, in the study of so-called reticulo-endothelial blockade. He believed that it was impossible to produce such a condition by injection and splenectomy, so great was the cell regeneration.

Prof. LORRAIN SMITH (Edinburgh) pointed out that Dr. Cappell had described the occurrence in inflammatory tissue of unstained macrophages even after injection of vital dye. He wished to know where these came from.—Dr. CAPPELL in reply stated that certain cells of the reticulo-endothelial system failed to stain and these he regarded as immature but potential macrophages.

Prof. J. S. DUNN asked whether Dr. Cappell could state what was the relationship between monocytes in the blood stream to the other varieties of cells described, and whether the small mononuclear could be distinguished from lymphocytes.—Dr. CAPPELL replied that the small mononuclear differed somewhat in mitochondrial structure, although he believed both types of cell to be capable of further development if they left the blood stream and entered inflammatory tissue.

SECTION OF ORTHOPÆDICS.

OPERATIVE TREATMENT IN TUBERCULOSIS OF THE LARGER JOINTS.

Mr. G. R. GIRDLESTONE (Oxford), who opened the discussion, explained that the field of debate had been restricted to the use of operations in the actual course of the treatment of tuberculosis, so as to exclude the wide field covered by operations for the late complications and for diagnosis. The latter were a necessity in certain early cases, where the diagnosis could be made in no other way; but even after an arthropsy had been made a few tubercle bacilli might cause great disturbance of a joint though hard to find in a piece of synovial membrane. Prof. Dreyer had suggested that the bacilli might at times be in a non-acid-fast condition and difficult on this account to observe. Mr. Girdlestone quoted a letter from Prof. Osgood of Harvard in which he referred to the risks of starting sinus formation by the exploration of a joint.

The aims of treatment were, he said, twofold: (1) to save the life of the patient; (2) to restore a safe and useful limb, suitable for the ordinary stresses of life. The dangers to life were from continuance of the tuberculosis, whether in the joint itself, or in deep lymphatic glands, whose involvement was apt to be forgotten, though probably of the first importance. It was from the lymphatic focus that the joint was first infected and that secondary infections occurred, and this focus was easy to heal in children by general hygienic measures, whereas it was rare to get it healed in adults. On the other hand, the joints of

children healed with extreme difficulty, while radical operation quickly healed the joints of adults, but left them at the mercy of the lymphatic focus, so that they usually died from various secondary foci in the late stages of their ailment. In children the dangerous period occurred soon after the diagnosis was made in the early days of hospital treatment. There was, he went on, a fallacy in regarding quiescence of a tuberculous joint as cure, for even when the lesion gave no sign of activity with Thomas's tests, it might yet light up directly it was subjected to the ordinary wear and tear of life. Such a joint might do well enough for the well-to-do living a sheltered life, but it was useless to a working man. In the majority of cases treated for prolonged periods in an open-air hospital, it was only this quiescence that was obtained in the larger joints, more particularly the hip; the study of remote as opposed to immediate hospital results during the last few years had made this clear. Operative treatment was therefore advisable for quiescent joints which did not regain the full normal range of movement and did not keep it with unrestricted use; small degrees of movement simply invited strain and resultant flare-up.

Speaking of the operations suitable for various joints, Mr. Girdlestone remarked that the type of excision and radical operation which gave useful function in the upper limb seldom provided the stability essential for the lower limb, where arthrodesis was usually the operation of choice. For the knee he advised immediate arthodesis in adults and in children with destruction of cartilage demonstrable by X rays, or whose knees remained persistently inflamed after thorough conservative treatment; but he preferred to delay the operation in them till the age of 12 or 14 years. The hip presented a problem of its own on account of the varied strains to which it was subject and because the shape of the joint made intra-articular arthrodesis difficult to achieve. In the adult he advised combining the intra- with the extra-articular operation, as a mere graft was likely to break with strain. In a child with a strong fibrous ankylosis and upward subluxation, the extra-articular graft of Hibbs might be sufficient; but if much granulation tissue filled the joint, the graft was apt to be absorbed. He expressed approval of the method suggested by Wilson of Boston in bringing down a large osteo-periosteal flap from the ilium, which had a much better blood-supply than the femoral graft.

Mr. Girdlestone concluded by showing lantern-slides illustrating various types of operations with their results, and the healing of chronic sinuses by the method of wide, lateral drainage with suture of the skin to the periosteum.

Discussion.

Sir WILLIAM WHEELER (Dublin) disagreed with Mr. Girdlestone as to the cause of death which he thought depended on the size of the joint rather than on the condition of any deep lymphatic focus. Few cases of tuberculosis in the finger died, whereas the mortality from hip and sacroiliac disease was high; moreover, some of the worst cases were cured rapidly, when the joint focus was removed by amputation. Conversely, cases diagnosed as rheumatism and treated by heavy massage might quickly absorb bacilli from the joint and die of meningitis. The facilities available to the patient must, he said, be borne in mind in planning treatment; each joint presented a separate problem. He agreed that the surgeon should aim at bony ankylosis in any tuberculous joint in which the full range could not be obtained. Diagnosis was difficult and he suggested that the metaphyseal foci described by Stiles might result from a mixed pyogenic and tuberculous infection. There were fashions in treatment and he would like speakers to discuss the place of arthroplasty in late cases of tuberculosis of the knee, and of early osteotomy to ensure rest in active tuberculosis of the hip. He demonstrated such a result in his lantern-slides of X rays before and after joint operations. In reference to one of them, he pointed out the need for wide resection of bone in excising a tuberculous wrist.

Mr. ALEXANDER MITCHELL (Aberdeen) associated himself with previous speakers in finding diagnosis difficult; but without it no rational treatment could be planned. The type of ankylosis ordinarily obtained was unstable, but he had seen admirable results in Hibbs's cases at the White Plains Hospital, New York, following the "extra-articular fusion" operation. He did not think there was much shock associated with this operation. He referred to the successive fashions in the treatment of these cases: (1) operative (frequent excisions); (2) fixation by splinting for years; (3) movement by Rollier's system; (4) and now arthrodesis combined with open-air treatment. He would himself divide tuberculous joints into four types requiring different methods: (1) the synovial type with no X ray evidence, where arthropsy presented the only means of making a certain diagnosis; (2) the epiphyseal lesion well shown in the X ray, but scarcely involving the joint itself, likely to heal well and not requiring operation; (3) the case with pain and spasm well marked and with obvious involvement of the articular surfaces; and (4) the case with extensive bone destruction. The two latter types required resection or arthrodesis. In elderly persons the joint should simply be amputated.

Miss M. FORRESTER-BROWN (Bath) referred to the technical difficulty, in extra-articular arthrodesis of the hip, of turning the graft upside down, as advised by Hibbs; she had found it better merely to slide the graft upward and fix it in a bed, prepared by thoroughly rawing the neck of the femur, by means of catgut sutures through the muscles over it. This safeguarded the blood-supply. She also referred to the difficulty of knowing at what stage a patient with a quiescent joint would tolerate operative interference.

Mr. H. A. T. FAIRBANK (London) advised radical removal of the disease from the adult knee, using a tourniquet which he thought reduced the risks of generalising the infection. He had found the sulphur method of value for some of the secondarily infected joints. He did not believe in grafting for sacroiliac disease.

Mr. WHITCHURCH HOWELL (London) related some very late results of treatment which he had met with—e.g., a case with 9 inches of shortening of the lower limb after excision of the knee in childhood; and a woman who had survived to the age of 75 years in spite of a sinus discharging since the age of 5 years.

Mr. A. W. ADAMS (Bristol) asked for figures of the frequency of generalised dissemination after operations on tuberculous joints, and also whether arthritis should not be anticipated by removal of epiphyseal foci.

Mr. W. ROWLEY BRISTOW (London) said that examination of the synovial fluid seldom gave positive evidence in tuberculous cases, even when, as was his practice, three guinea-pigs were injected; hence a negative result was of no value. He did not consider removal of a piece of synovial membrane for diagnostic purposes dangerous. Like other speakers, he had been much impressed with Hibbs's results by fusion operations, including that on the knee, where no radical removal was attempted. He did not fear shortening from operations on the knee in childhood, as the epiphyseal line need not be reached; prolonged and careful after-treatment was necessary to prevent bending during growth. If this precaution was observed no precise age limit need be fixed. He deprecated any attempt to divide the profession into two schools of treatment, operative and non-operative; each case should be dealt with on its own merits.

Mr. D. MACRAE AITKEN (London) hoped that the treatment of the future would be by anticipation and prevention of tuberculosis. He agreed that the essential principle of rest for an inflamed joint could be carried out, not only by splints, but also by such operations as extra-articular fusion of the hip, osteotomy, and amputation.

Sir ROBERT JONES (who presided) also begged that there should be no attempt to form two camps with opposing methods of treatment. While he had awful memories of the old surgical epoch in the treatment of tuberculosis, he was prepared to recognise that such an operation as extra-articular arthrodesis of the hip, by providing effective rest for the joint, complied with the principles he advocated—namely, adequate fixation of the affected joint, prevention of recurrent deformity, fresh air, and general treatment. He found it hard to follow the American statistics, quoted by Mr. Girdlestone, in which only 2 out of 150 cases were completely satisfactory after three or more years of conservative treatment. Such figures would have seemed ludicrous to Hugh Owen Thomas working under conditions much less favourable.

MR. GIRDLESTONE, in reply, said that he did not fear dissemination after operations on tuberculous joints, because the body was accustomed by then to deal with recurrent doses from the lymphatic focus. He regarded the use of a tourniquet as a safeguard and agreed that osteotomy might produce healing, although he preferred arthrodesis. He did not advise arthroplasty for tuberculous cases.

Demonstration at Grangethorpe Hospital.

At an afternoon demonstration Mr. R. OLLERENSHAW (Manchester) showed a series of cases, illustrated by simple diagrams of technique; among them, three cases of foot-drop treated by Campbell's posterior block method, some excellent results after various hip operations, and a series of congenital deformities with problems successfully overcome. A case of congenital dislocation of the hip, diagnosed as two months old, had been reduced (after Putti) without manipulation by persistent abduction of the lower limbs. Some spastic cases on whom Royle's operation of sympathectomy had been done some years previously showed only temporary improvement; better results had been obtained by Stöffel's peripheral nerve division. In a case in which synostosis of the radius and ulna had followed a forearm fracture in a child rotation of the forearm had been restored, after union of the fractures in good position, by Baldwin's method of resecting a small piece of the ulna near the wrist, so that the radius carried the ulna styloid process with it when it rotated.

Dr. H. POSTON (Manchester) exhibited results of compound fractures involving joints on which primary excision of the wound had been done within a few hours of the accident, followed by swabbing and skin infiltration with 1 per cent. mercurochrome and fixation in plaster-of-Paris. The only drainage had been down to the sutured capsule for the first 48 hours.

Dr. MARGARET GREG demonstrated a series of cases of renal rickets with dwarfing and of adolescent rickets with somewhat similar bone changes, as seen in skiagrams.

Dr. J. G. JOHNSTONE showed cases illustrating various difficulties met with in the treatment of congential dislocation of the hip, including the development of osteochondritic changes in the head of the femur and recurrent subluxation. One case was walking well after reduction at 9 years old.

Mr. HARRY PLATT (Manchester) demonstrated transplants of the trapezius for deltoid paralysis, in which there was good stabilisation of the joint during abduction. A case of vertebral osteochondritis shown has been used by Calvé to illustrate his recent article. In two cases the power of opposition had been restored to the thumb by transplantation of the sublimis tendon of the ring-finger into the flexor longus pollicis.

Dr. S. POPE (Manchester) summarised a thesis on the experimental production of birth palsies. By using 24 dead fœtuses and extracting them from a machine by methods imitating those of obstetrics, with varying conditions of resistance, he had succeeded in producing a number of lesions of the brachial plexus and tears of the sternomastoid which correspond to those met with clinically.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1928 statistics of four large towns, with widely differing industries:—

Name of district and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Sheffield .. (515,400)	16·4	11·8	0·94	1·37	1·9	1·6	73/38	41	6·0
Leicester .. (246,000)	16·2	11·2	1·24	1·42	1·5	1·8	71/31	16	3·5
Nottingham . (266,600)	17·7	12·8	1·10	1·44	2·8	1·5	85/40	28	5·5
Blackburn .. (125,100)	13·8	12·2	0·82	1·30	2·5	2·7	80/38	28	6·3

Sheffield.

Dr. F. E. Wynne draws attention to the altering age-constitution of the population and to the possibility of a progressive rise in the death-rate from all causes in the coming years. He gives a table comparing the age-constitution of the population of Sheffield at the censuses of 1911 and 1921, which shows that in the latter year there was a decrease in the population at 0–10 years, an increase at 10–20, a decrease at 20–40, and an increase at 40–80. Environmental sanitation has been improved by the completion, during 1928, of the scheme for the conversion of privies into water-closets and attention is now being turned to the substitution of modern water-closets for trough closets and waste water-closets, and of sanitary bins for the old insanitary ash-pits.

There were 61 notifications of small-pox with no deaths. The notifications of pneumonia numbered 2693, of which 328 were removed to the city hospital for treatment. The death-rate from pulmonary tuberculosis among the grinders may have been reduced by unemployment in their trade, but, however that may be, it is very satisfactory that the Sheffield death-rate from all forms of tuberculosis is the lowest of the 18 great towns of England and Wales with populations exceeding 200,000 with the exception of Plymouth (0·90) and that the Sheffield rate for pulmonary tuberculosis (0·745) is lowest of all these towns with the exception of Portsmouth (0·744). Dr. John Rennie, tuberculosis medical officer, emphasises the fact that their efforts are directed towards a decrease in the proportion of infectious cases among the notifications and the establishment of a diagnosis of tuberculosis in the earliest stage of the disease. The cases on the register at the end of 1928 numbered 5067, of which 1134, including nine children under 15 years, were "open" cases. Ninety-three per cent. of the pulmonary cases notified were examined by the dispensary staff. The number of notifications of tuberculosis of the lung was about five times the number of deaths, and the deaths were about the same in number as the notifications of "open" cases. The medical practitioners sent 2509 "suspect" cases to the dispensary for diagnosis, and in addition 2371 contacts were examined. The diagnosis of "suspects" and "contacts" often entails observation for long periods and residence in the observation beds. Thus only 124 of the suspects and 1575 of the contacts were definitely classed, without a period of observation, as non-tuberculous. The beds allotted for the treatment of tuberculosis appear to have now

reached a maximum figure and waiting-lists for institutional treatment are things of the past. For respiratory tuberculosis alone there are 504 beds.

Dr. C. Lee Pattison, surgical tuberculosis officer, reports that the period of stay in the King Edward VII. Hospital for non-pulmonary tuberculosis has been reduced to an average of 275 days by securing the patients at an earlier stage of the disease. Provision has now been made for adult patients with bone or joint tuberculosis at Nether Edge Hospital. As regards light treatment, which has been continued both at the King Edward Hospital and the dispensary, Dr. Pattison says: "In some types and with certain degrees of activity of the disease, ultra-violet light treatment is indicated and proves definitely beneficial, but in other instances it should be avoided as in them it appears to be useless or even harmful. At the hospital irradiated foods have been found beneficial in some cases and may prove useful when cod-liver oil is not well tolerated. During the year a clinic for lupus has been started and up to the present the results obtained from general radiations with ultra-violet light and local treatment with a Kromayer lamp have been very gratifying.

It is still impracticable to apply all the powers contained in the Housing Acts, and there is much overcrowding. Progress has been made with reconstruction schemes. Thus in the case of three schemes, involving 173 houses, all the areas have been cleared, and the tenants moved to the Wybourn Estate, and in another area, involving 126 houses, condemned in 1928, a considerable portion has been cleared. Proceedings are pending with regard to two other areas involving 95 and 174 houses respectively. During 1928 an interesting departure was made by the allocation of 26 municipal houses to families living under unsatisfactory conditions, among whom there was an "open" case of tuberculosis. Twenty-three families have been rehoused under this scheme and their members have been examined at the dispensary, and a striking improvement in the health of the children has been noted since rehousing.

A table given by Dr. Wynne shows that the maternal mortality from childbirth has been considerably higher during recent years. Thus in 1923 it was 4·02, and in the five succeeding years 4·53, 4·93, 5·99, 7·27, and 6·04. The puerperal sepsis rate alone during the last three years was 2·33, 3·64, and 3·79.

Leicester.

Dr. C. Killick Millard gives a survey of the small-pox experience in his city which for 40 years has "set the compulsory vaccination law at defiance." During that period 90 per cent. of the children born in Leicester have not been vaccinated. Up till last year there were four small epidemics—namely, in 1892–93 with 358 cases and 21 deaths; in 1902–03 with 394 cases and 21 deaths; in 1903–04 with 321 cases and 4 deaths; and in 1925 with 72 cases and no deaths. The last mentioned was of the mild type which apparently breeds true and Dr. Millard goes on to describe the epidemic of 1928–29 which was also of the mild type. On May 11th, 1928, small-pox was introduced by a tramp and from that date there were other introductions of the disease, generally by missed cases, causing spread of the infection with intermissions up to June, 1929. In all there were 90 cases in 1928 and 107 in 1929. There were no deaths. The vaccinated cases numbered 23 and the unvaccinated 174. Medical practitioners were encouraged to visit the small-pox hospital to familiarise themselves with the signs and symptoms of the "mild" disease. Some who had not been recently vaccinated refused—unwisely, says Dr. Millard, as every doctor may have to attend a small-pox case and should surely protect himself by vaccination. Vaccination was pressed in the case of "house" contacts, but not so much so in the case of "outside" contacts. Of 542 house contacts, 303 submitted to vaccination, whilst of 237 outside contacts 103 were vaccinated. A great point is made in Leicester of close supervision of contacts. Exclusion of contacts from work rested with the employer and the amount paid in compensation to contacts kept from their work was £153. The number of new cases occurring was included in the weekly returns sent to the press, but there was no attempt to induce the public to get vaccinated. Apart from the contacts the vaccination figures were lower than usual. Dr. Millard throws out the suggestion that when the administration of the Vaccination Act is handed over to the health authorities, it might be made the subject of local option. He states that there has never been a case of encephalitis following vaccination in Leicester, but points out that such an occurrence would be rather unlikely when there is so little vaccination.

The year 1928 was epidemic for scarlet fever. There were 1971 cases with four deaths, and Dr. Millard points out that the "new treatment" was very successful in cutting short the disease and preventing complications. Dr. H. Stanley Banks, the medical superintendent of the hospital, described this treatment by the intravenous injection of antitoxin in a paper in THE LANCET of Feb. 23rd, 1929. The cases treated in hospital were divided into two groups. Group I. included all the more severe cases numbering 404. They were all treated intravenously, had a complication rate of 3·2 per cent., with one death, and their average stay in hospital was 17·7 days. Group II. included 458 cases who had no antitoxin and 102 who had it intramuscularly. This group included all the milder cases. They had a complication rate of 23·7 per cent. and their stay in hospital averaged 26·8 days, and there was also one death among them. Dr. Banks is most enthusiastic about the treatment and considers the whole outlook in the hospital treatment of scarlet fever has been altered thereby. Scarlet fever wards under the new treatment may be almost surgically clean. There are practically no complications and scarcely any medical or nursing treatment is needed after the first few hours. Hospital beds go twice or thrice as far.

Dr. Banks has also made a trial of the sanocrysin treatment of pulmonary tuberculosis in 22 cases. He thinks the type which did best was the middle case, neither early nor too advanced, which did not appear to respond well to routine sanatorium treatment. Fourteen of this type were treated; in six the results were remarkably good, and in eight they appeared to be favourable. He points out that there has been no opportunity to speak of any but immediate results and that the late results will probably depend on the patient's ability to conform to the rules of the tuberculous life. The cost of sanocrysin for the first course is about £3, and for the second course £2 6*s.* 8*d.* per case, and the considerable labour involved in giving the injections, making tests and examinations, and keeping records makes the treatment expensive. The Leicester special clinic for the early diagnosis of cancer which was started in July, 1927, and restricted to women and affections of the breast and uterus, has now been extended to all forms of cancer in either sex.

Municipal houses, Dr. Millard points out, have done little or nothing to benefit the class most in need of relief, and he commends the solution of the problem put forward by the Housing and Town Planning Council of Great Britain in their report entitled "A Policy for the Slums." This report advocates a children's rent allowance scheme. Dr. Millard also emphasises the fact that the municipality can safely build a larger proportion of houses with two bedrooms, seeing that as landlord it has the power to control their use.

Blackburn.

Dr. V. T. Thierens, in his first annual report, says the year has been one of great industrial depression, with consequent unemployment. The death-rates from respiratory diseases and from pulmonary tuberculosis among the cotton operatives were lower than in 1927. During the year 94 municipal and 41 private enterprise houses were built, and at the

end of the year 60 municipal and 70 private enterprise houses (none of which was State-aided) were under construction. The housing problem in Blackburn is less urgent than in other towns. The population is actually less than it was in 1919 to 1924. There are no real slums, although there are some areas of unsatisfactory property. There were, however, 471 Blackburn residents living in rooms, who were on the waiting-list for municipal houses at the end of 1928. There are 88 houses let in lodgings, housing about 1000 persons, with poor accommodation and excessive rents. In some instances the rent for two partly furnished rooms exceeds that asked for houses on the corporation estates. At the end of the year there were 57 caravans in use as human habitations. There are 181 factory chimneys, 103 of which have smoke-preventing appliances. Blackburn's effort to prevent industrial smoke does not appear to be energetic. The permissible limit of black smoke for a furnace serving one boiler is 4 minutes in the hour, or twice that of Sheffield. The limits for 2, 3, and 4 boilers are 5, 6, and 7 minutes respectively. During the year 103 observations were taken and in 54 excessive smoke was emitted. The only action mentioned is the service of 21 informal and two statutory notices.

The veterinary inspector, Mr. E. J. Burndred, reports that as the result of regular inspection of the cattle aided by examination of milk samples, three cows in the borough farms were found with tuberculosis of the udder, and seven cows were slaughtered and one died which suffered from advanced tuberculosis. The number of milk cows stalled in the borough is not mentioned. There are three farms supplying Certified milk to Blackburn, two local and one some distance away. The price of this milk ranges from 7½*d.* to 4*d.* per pint. There are 18 farms in the district producing Grade A milk, five of which are in the borough and 13 in the county. The price is from 3½*d.* to 4*d.* per pint. Two dairies, one in the borough, are licensed for pasteurised milk, and a new dairy is being established in the neighbourhood by a number of coöperative societies for the pasteurisation and bottling of milk, so that in the near future a much larger proportion of Blackburn's milk will be pasteurised. During the year 446 samples of milk were examined for the presence of dirt. The samples taken from producer-retailers in the borough were better as regards contamination than those taken from producer-retailers outside the borough and those taken from retailers in the borough, who procured their supplies from outside, were much worse than the two classes first mentioned. A standard has been laid down for the equipment to be required from milk retailers in the borough. A specimen plan is given in the report, showing the arrangement of the two rooms needs for washing and storing the utensils and for storing the milk respectively. At the end of the year about 12 of the 50 retailers had complied with these suggestions. The seventh clean milk competition extended over the whole year. The competitors are divided into two classes, one for Certified and Grade A milk, and the other for all other milk. There were 13 entries for the one class and six for the other, but the ordinary milk producers do not yet take much interest in the competition.

There were 104 notifications of diphtheria with a case fatality of 10·49 per cent. Twelve of the 13 fatal cases received no antitoxin treatment for 4 to 12 days after the onset of the disease. There were ten notifications of small-pox, all of the mild type. A table is given showing the condition at the end of 1928 of the patients discharged after treatment for pulmonary tuberculosis from Meathop Sanatorium. Of 20 patients discharged in 1909 or before, 12 are dead, 7 untraceable, and 1 is in full work with no symptoms. Of 30 discharged in 1916, 15 are dead, 5 untraceable, and 9 in full work and 1 unable to work. Of 24 discharged in 1923, 8 are dead, 4 untraceable, 3 at full work with no symptoms, 4 in partial work, and 5 alive. Of 17 notified cases of ophthalmia neonatorum one became totally blind and two were left with serious and disabling impairment of vision. In five of the cases domiciliary nursing was undertaken by the Nursing Association under agreement with the corporation. A bed is now available at the corporation hospital for in-patient treatment.

Nottingham.

Dr. Philip Boobbyer informs us that in 1916, 20 months after the outbreak of war, the city council discontinued printing annual health reports and gave instructions for the statistical and other records to be prepared in manuscript. The document just issued is therefore a survey of the 13 years for which printed annual reports are lacking. It is also Dr. Boobbyer's farewell report after 40 years' service as medical officer of health of Nottingham, and is commented on elsewhere in this issue.

MENTAL HOSPITAL REPORTS.

Of the two *Kent County Mental Hospitals*, that at *Barming Heath, Maidstone*, had 1925 patients in residence on Dec. 31st, 1928. This was an increase of 72 on the previous year, despite the transfer of 40 men. The medical superintendent hopes that the shortage of accommodation will be met by the provision of an admission block. The admission-rate for women was a record for the hospital. The recovery-rate was 24·7 per cent. and the death-rate 7·1 per cent. Autopsies were held in 80 out of 87 cases. Eighteen patients are under treatment for tuberculosis, but the death-rate from this cause was half that of the average in mental hospitals. There was one case of dysentery, the first for three years, two cases of erysipelas, eight cases of scarlet fever, and some influenza. The occupation therapy department had a very successful year; the printing and bookbinding department supplied bound periodicals for the wards. Parole is given freely. A kinematograph apparatus has been fixed in the recreation hall. Forty-one attendants and 49 nurses are certificated or registered, and 18 women nurse in the male wards. Twelve nurses arrived from Denmark last year for a six months' course of training in this hospital. At *Chartham Downs, Canterbury*, there were 1354 patients at the end of last year, 40 cases having been transferred from Barming Heath. Here also the medical superintendent hopes for a new block for recent and curable cases. The recovery-rate was 23 per cent. and the death-rate 8 per cent. Post-mortem examinations were held on 90 of the 127 patients who died, and the pathological department carried out over 2000 routine examinations. The hospital was entirely free from both influenza and dysentery, but the death-rate from tuberculosis is rather higher than the average. A verandah was added to the female tuberculosis ward, and plans for a new operating theatre have been passed. More accommodation is needed for the nursing staff, and plans are under consideration. Thirty-eight attendants and 23 nurses are certificated or registered; no women nurses are employed on the male side.

Barnwood House Hospital for Mental and Nervous Disorders, Gloucester, records a successful year of work in 1928. On Dec. 31st there were 152 patients, including 19 voluntary boarders. There was a recovery-rate of 35 per cent. and a death-rate of 8 per cent. The general health was good. Three of the five new bedrooms were provided with "Vitaglass" verandahs. The city having extended an electric cable past the hospital, the committee at once made arrangements for securing a supply of current. The 33 acres of land purchased in 1926 have now been taken over as additional farm land. Eight patients of each sex were allowed out of the grounds, and a seaside house for the summer was taken at Tenby. Members of the staff have held classes in rug-making and other handicrafts. A physician, a surgeon, a pathologist, and a dentist attend when required. Of the attendants 63 per cent. and of the nurses 41 per cent. are certificated, seven

having obtained their R.M.P.A. certificate during the last year.

At the *City of Birmingham Mental Hospital* there were 2671 patients on the books on March 31st, 1929. Lack of accommodation is being met by the inclusion of an adjoining fever hospital and private house, the former for female patients and staff, and the latter for male convalescents. As usual, research has played an important part in the year's work, and the chief medical officer submits a preliminary report from the three institutions together. The dental surgeon notes that, as in former years, not more than 2 per cent. of the patients admitted can be said to have a healthy dentition. More conservative dentistry is found in the younger patients, and this is held partly responsible for the greater amount of focal sepsis. Septic conditions of the upper air passages were found in half the cases admitted, the commonest condition being a multi-sinusitis. The tonsils were diseased in 52 per cent. of the cases investigated, and adenoid vegetations were removed from 10 per cent., all adults. The ear, nose and throat surgeon performed 230 operations during the year, and, together with the director of the research laboratory and chief medical officer, has published a report on the relation of sinusitis to mental disorder. Another communication submits that disease extending from the sphenoidal sinus may cause symptoms indicating disorder of the pituitary gland. Gynæcological disturbances were found in 67 per cent. of the women admitted, but the septic condition was only serious in one case. Most of the women suffered from chronic infections of the cervix. A number of displacements and other gynæcological conditions were corrected. Further evidence was collected during the year to associate mental disorder with influenza. A striking absence of noise and excitement in the wards is attributed to the early and systematic treatment of septic conditions. In Birmingham they have no doubt that ultra-violet rays have value when suitably applied to mental disorder.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 21ST, 1929.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 119 (last week 96) ; scarlet fever, 2322 ; diphtheria, 1237 ; enteric fever, 116 ; pneumonia, 624 ; puerperal fever, 31 ; puerperal pyrexia, 91 ; cerebro-spinal fever, 13 ; acute poliomyelitis, 18 ; acute polioencephalitis, 3 ; encephalitis lethargica, 26 ; continued fever, 2 ; dysentery, 36 ; ophthalmia neonatorum, 108. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Sept. 24th–25th was as follows :—Small-pox 122 under treatment, 19 under observation (last week 121 and 15 respectively) ; scarlet fever, 1533 ; diphtheria, 1645 ; enteric fever, 18 ; measles, 204 ; whooping-cough, 203 ; puerperal fever, 27 (plus 7 babies) ; encephalitis lethargica, 125 ; poliomyelitis, 4 ; " other diseases," 13. At St. Margaret's Hospital there were 24 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 15 (5) from measles, 8 (2) from scarlet fever, 24 (2) from whooping-cough, 27 (2) from diphtheria, 144 (27) from diarrhœa and enteritis under two years, and 17 (3) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa (which have again increased by one-third) 12 each were reported from Birmingham and Liverpool, 6 from Sunderland, 5 from Hull, 4 each from Walsall and Middlesbrough, while Glasgow, Dublin, and Belfast reported 5, 8, and 9 respectively. Two deaths from measles occurred in Manchester. Three from scarlet fever and 4 from whooping-cough in Liverpool. The death from enteric fever was reported from Leeds.

The number of stillbirths notified during the week was 238 (corresponding to a rate of 38 per 1000 births), including 49 in London.

Reviews and Notices of Books.

OSTEOMYELITIS AND COMPOUND FRACTURES AND OTHER INFECTED WOUNDS.

Treatment by the Method of Drainage and Rest. By H. WINNETT ORR, M.D., F.A.C.S., Chief Surgeon of the Nebraska Orthopedic Hospital. London : Henry Kimpton. 1929. Pp. 208. 21*s.*

IN this book Dr. Orr describes his original method for the treatment of osteomyelitis and compound fractures. In cases of osteomyelitis the infected bone is incised early with adequate opening into the medulla, and the cavity is packed with vaseline gauze. The limb is immobilised in correct alignment by plaster casts or adequate splints. Dressings are done at infrequent intervals and only in consequence of rise of temperature, odour, or other special reasons. In compound fractures the principle involved is the maintenance of correct length and alignment by extension, whether by adhesive moleskin straps or by ice tongs or pins, incorporated into a plaster cast. Fixed extension having been achieved, the wound is treated by adequate drainage, and vaseline packs with very infrequent dressing. Dr. Orr's book contains much special pleading, but his thesis has both reason and results behind it, and its adoption would do much to improve the treatment of infected bone lesions. Chapters on antiseptics and on the lessons of the war illustrate the way in which Dr. Orr has reached his present views, and case-histories of patients treated by this method by the author and by other surgeons make convincing reading.

That Dr. Orr's general principle is right we have no doubt at all, and in establishing it he has achieved a notable surgical advance. Whether the details of his technique are all equally commendable is not so certain, but is of less moment. In osteomyelitis cases particularly the thoroughness of the primary operation must be of paramount importance, and the author appears to us to underrate his surgical skill in his anxiety to give full credit to the principle of his method. On the whole, however, he has put his case fairly, and his book should be read by every surgeon. Dr. John Ridlon contributes a delightful introduction. We doubt whether the general surgeon is quite so black as Dr. Ridlon paints him, but feel sure he will enjoy such witty castigation. Dr. Ridlon quotes Talleyrand's saying, " Be zealous ; but don't be too damned zealous " ; that remark could be applied to his own defence of the orthopædist as well as to the alleged officiousness of the general surgeon.

SLEEP.

The Treatment of Its Disorders. By R. D. GILLESPIE, M.D., M.R.C.P., D.P.M., Physician and Lecturer in Psychological Medicine, Guy's Hospital. London : Baillière, Tindall and Cox. 1929. Pp. 276. 7*s.* 6*d.*

THIS addition to the Minor Monograph Series is intended to indicate to the practitioner the various means by which insomnia may be treated, together with a rational basis for the methods of treatment recommended. Since no comprehensive monograph on the subject of sleep and its disorders has appeared in English for some years the book supplies a definite demand, and it gives an entirely up-to-date presentation of the subject. The first section considers the several physiological mechanisms such as variations in the depth of sleep and the state of the reflexes, circulatory, respiratory, and excretory systems during sleep. Recent work shows that the basal metabolic rate is 15 per cent. less during sleep than in the waking state, and the investigations of A. Waller, Farmer, Richter, and others indicate that the electrical resistance of the body is a measure of the depth of sleep since the resistance rises during sleep and falls towards the onset of the waking state. The effects of sleeplessness both in man and animals

are next discussed. It is comforting to read the result of a review of the available experimental evidence; the conclusion is reached that by no known method has it been possible so far to demonstrate any but trifling physical or mental changes after prolonged insomnia in man. At present all that can be said is that the signs are entirely subjective and that they can be abolished after as many as 115 hours of insomnia by a single and not unduly prolonged period of sleep. It has often been maintained that sleeplessness may lead to mental disorder, but it is true that the examples usually cited are those of anxiety states, schizophrenic, or one of the common "functional" syndromes. If insomnia were the direct cause of mental disturbance it would presumably act by virtue of definite nerve-cell changes, and the resulting mental disorder would be of the "organic" type such as delirium, impairment of memory, and so forth. Such states, it is considered, are the only relevant types of reaction to insomnia and are rare. Most people will agree that anxiety and worry regarding insomnia are more potent in aggravating an anxiety state than the actual loss of sleep, and that sleeplessness in mental disorder is more symptomatic than causative.

Dr. Gillespie divides the various types of sleep disorder into three main classes: 1. Qualitative alterations, such as decrease (insomnia) and increase (somnolence). 2. Alterations in the incidence of sleep—e.g., attacks of sleep (narcolepsy), and the reversal of sleep rhythm, such as occurs in encephalitis lethargica. 3. Abnormal interruption of sleep—hypnagogic hallucinations, tendon-motor shocks, nightmares, night terrors, somnambulism, &c. From the therapeutic standpoint the types of insomnia are classified as follows: 1. Sleeplessness due to physical disease—(*a*) of the central nervous system, (*b*) of other parts of the body. 2. Sleeplessness due to external irritation—e.g., climatic conditions. 3. Sleeplessness resulting from mental causes. This classification appears unnecessarily complex, and the simpler method adopted by other authors which divides the causes of insomnia into two main groups—(1) physical and (2) psychical—would include all the above. The difficult subject of treatment is admirably dealt with in this book and the various hypnotics in use are discussed. The author has been lucky in finding that "paraldehyde in doses of two to three drachms is often effective" in cases of sudden excitement and delirium tremens. The exceptional instances mentioned—in which the dose has to be repeated in an hour or so—in our experience are more often the rule. The judicious use of the barbitone series of hypnotics is rightly defended. Finally, the various theories as to the nature of sleep are reviewed in an interesting manner, and especially that relating to the possible presence of a sleep-controlling centre in the region of the third ventricle and Pavlov's view which identifies sleep with widespread cortical inhibition.

The book may be read with pleasure and profit by students and practitioners.

OTOSCLEROSIS.

A Résumé of the Literature to July, 1928. Compiled under the direction of the Committee on Otosclerosis, American Otological Society. New York: Paul B. Hoeber. 1929. Two vols. Pp. 724. $15.00.

THIS work, which is claimed to be the first comprehensive survey of the literature on this subject ever made, is a résumé of all the literature on otosclerosis down to July, 1928. The compilation has been carried on under the supervision of Dr. Arthur B. Duel as part of a programme of research in this disease begun by the American Otological Society under a grant of $90,000 made by the Carnegie Corporation. The Committee have begun their work in the right way, for it is essential that a research of this nature should start with a full record of past investigations. The work is well edited and arranged, and is supplied with a full index of subjects and another of personal names, repeated in each volume, while the second volume also contains a complete bibliography arranged alphabetically under the names of authors. The first volume deals with the pathology and ætiology of otosclerosis, and the second with symptoms, diagnosis, and treatment. Treatment is discussed under the heads of local surgical measures, local non-operative measures, and general treatment, and, being largely historical, is partly concerned with methods which have been tried and abandoned. It forms somewhat melancholy reading, for it tells a story of therapeutic efforts ranging from removal of the stapes to the use of radium and X rays, some of which have been launched with enthusiasm only to be relinquished on further trial. Further research is urgently needed, for there is at present no reliable method of treating this widespread and serious affection.

The work is a compilation to which the editors have refrained from adding comments of their own. As a work of reference it should be in the hands of every otologist.

MEDICINE: ITS CONTRIBUTION TO CIVILISATION.

By E. B. VEDDER. London: Baillière, Tindall and Cox. 1929. Pp. 398. 22*s.* 6*d.*

Colonel Vedder has put together an excellent account, for popular and semi-popular consumption, of the causes of disease and of what has been achieved in disease prevention and what is to be aimed at and hoped for in the future. The first part gives a sane and sensible discussion of diet, exercise, ventilation, &c., and adequately describes the important features of infectious diseases. The second part summarises the facts of the decline in the death-rate and analyses the components of the increase in the average expectation of life which is the triumph of modern sanitation. He draws the sound conclusion—if combined and sincere effort can do so much, it can doubtless do much more, and at a small cost. The queer thing about the book is its title; the contribution of medicine to material well-being is obvious enough, but has it done nothing for the mind and spirit as well?

AN INTRODUCTION TO THE HISTORY OF MEDICINE.

With Medical Chronology, Suggestions for Study and Bibliographic Data. Fourth edition. By FIELDING H. GARRISON, A.B., M.D., Lieut.-Colonel, Medical Corps, U.S. Army, Surgeon-General's Office, Washington, D.C. London: W. B. Saunders Company, Ltd. 1929. Pp. 996. 55*s.*

Garrison's "History of Medicine" needs no introduction to English readers. It is seven years since the appearance of the last edition, and while there may not be very much to add to the earlier sections on the history of medicine, many developments which occurred during the decade following the war had to find a place. It is in the later chapters, therefore, that the reader must look for changes; the chronological section has been increased nearly twofold. A new chapter on medicine in prehistoric times has been added and forms the second chapter of the present edition. In dealing with the history of recent advances the author has wisely confined himself to giving salient examples, realising that to attempt exhaustive handling would be premature and confusing to the reader. In view of the amazing complexity of the subject praise is due to Colonel Garrison for the way in which he has dealt with his material; nothing of importance seems to have been omitted, and the student will find in this volume an excellent epitome of medical history. Anyone interested either in the works of the fathers of medicine, or in the men themselves, or in the history of epidemics or diseases will find information in this book, and if it is not full enough for his purpose he can refer to original sources to which references are given. In order to keep the size of the book within reasonable bounds it

has been necessary to print some of the sections in smaller type, but the printing and paper are so good that no strain is thrown on the eyesight of the reader.

LABORATORY MANUAL FOR COMPARATIVE ANATOMY.

By MALCOLM E. LITTLE and RUDOLF T. KEMPTON, New York University. New York: The Macmillan Company. Pp. 286. 10*s*.

THIS book is written as a practical guide for students in American laboratories, a fact which renders it in some ways less apt for English students. Alligators, for example, are not common objects in laboratories over here, nor do we often see Necturus or Cryptobranchus given out, as one may distribute frogs, to waiting classes. But these details need not be considered seriously. The book, wherever we have tested it, gives accurate information, and the directions are likely to be of practical value in laboratories where the help of a demonstrator is available if required. When one realises that the book is intended as a compromise between systemic and systematic teaching, and is divided into distinct parts allowing change of order, one's first sense of slight confusion in arrangement is dispersed. The usefulness of a laboratory manual depends largely on the text-book employed at the same time. This book seems to us to provide a good course for students if used in conjunction with a suitable larger book.

THE VISCERAL NERVOUS SYSTEM.

En oversikt over den kliniske undersökelse av det viscerale nervesystem og en kritikk av de forskjellige prövers praktiske verdi stöttet paa egne undersökelser. By Dr. G. LANGFELDT. Bergen: J. W. Eide's Boktrykkeri. 1929. Pp. 134.

THIS monograph includes a review of the clinical examination of the visceral nervous system and a criticism of the practical value of various tests of its functions. Dr. Langfeldt has been awarded Prof. Skjelderup's gold medal for the work here published, which is based on studies undertaken in Hamburg and Bergen, the experiments being carried out at the Friedrichsberg Hospital in Hamburg and the Haukeland and Neevengaard Hospitals in Bergen. In his introduction the author produces physiological and anatomical evidence which shows that there is no absolute functional antagonism between the sympathetic and parasympathetic systems. Much space is devoted to tests with atropine and pilocarpine, as well as to physical tests, such as Aschner's reflex. Many of the conclusions to which the author comes are negative, and he has found that the subcutaneous tests with various drugs (pilocarpine, &c.) are worthless in the diagnosis of chronic encephalitis, dementia præcox (of which alone he examined 71 cases), and various other mental diseases. Summaries in German and English are appended, but there is no bibliography—a rather unconventional omission.

BACTERIOLOGY AND SANITARY SCIENCE,

By LOUIS GERSHENFELD, Ph.M., B.Sc., P.D., Professor of Bacteriology and Hygiene in the Philadelphia College of Pharmacy and Science, Philadelphia. Philadelphia: Lea and Febiger. 1929. Pp. 432. $4.00.

THIS is a relatively short text-book on bacteriology. The subject is treated mainly from the general hygienic and epidemiological points of view, and in consequence the descriptions of individual species and of their pathogenic effects are reduced to a minimum. The book is primarily written for students in pharmacy, chemistry, and allied sciences, but it is nevertheless dominated by the pathogenic micro-organisms, both human and animal, and only brief reference is made to the field of industrial bacteriology. On the whole a very fair account of these aspects of the science is presented, without many details of technical procedures. The Wassermann and Widal tests are described in general terms, from which the reader will gather their import and their application, but without necessarily realising that "complement" is in practice usually synonymous with guinea-pig's serum. This example is intended not to criticise but to explain the scope of the book. The allocation of 40 pages to the technique of culture and staining do not accord with the disregard for technical detail which pertains elsewhere. A similar lack of balance is observable in other places. Thus the virus diseases are allotted only ten pages and suffer badly from this compression, whilst diseases of plants are hardly worth mentioning if less than a page can be spared to them. It does not help the reader to be told that "the following three methods are employed in making microscopic examinations of milk: Prescott-Breed method, Stewart-Slack method, and the Doane-Buckley method" if the significance of this imposing concatenation of proper names is not explained to him. The arrangement of the book is curious. Why should the bacteria be separated from the higher bacteria by an article on sterilisation, and that article separated from the allied subject of insect extermination and insecticides by chapters upon animal parasites and venomous reptiles? The chapters on sterilisation and disinfection are amongst the most comprehensive in the book. Apart from these minor matters of detail the book is well adapted to give the students for whom it is designed a sound conception of bacteriological principles and to the practising pharmacist a clear conception of the nature and rationale of many of the products he is now called upon to sell.

HANDBOOK OF BACTERIOLOGY.

Second edition. By JOSEPH W. BIGGER, M.D., Sc.D. Dub., Professor of Bacteriology and Preventive Medicine, University of Dublin. London: Baillière, Tindall and Cox. 1929. Pp. 452. 12*s*. 6*d*.

THIS excellent handbook has now reached its second edition and has been very completely revised. We confirm the favourable opinion expressed at its first appearance; it is one of the best students' text-books of bacteriology on the market. It is short, concise, and well written, and the author has succeeded in avoiding the sacrifice of essentials to brevity and the cramped, unreadable style familiar in books which have been too drastically cut down. At the same time we note that the present edition seems slightly fatter than its predecessor, and we trust that Prof. Bigger will sternly repress any further tendency to expansion, since in its present form and bulk the student can study the book at his convenience.

FOOD, HEALTH, VITAMINS.

New edition. By R. H. A. PLIMMER, D.Sc. Lond., Professor of Chemistry in the University of London at St. Thomas's Hospital Medical School; and VIOLET G. PLIMMER. London: Longmans, Green and Co. 1929. Pp. 120. 3*s*.

THIS is a new and considerably enlarged edition of the book by the same authors previously published under the title of "Food and Health." The expansion of the book has been made necessary by recent developments in our knowledge of the vitamins, and it now supplies in simple language a valuable summary of modern views on this subject. A new chapter has been added dealing briefly with the general principles of dieting in pregnancy, old age, and obesity. Two weekly menus for standard-sized families are included to illustrate how simple diets containing balanced quantities of the essential food constituents can be prepared at a minimum cost. The authors perhaps take up too uncompromising an attitude on the pathological consequences of minor degrees of vitamin B deficiency, since this question is still highly controversial. In other respects their book can be recommended as furnishing sound advice to the layman who wishes to know what kinds of food are most likely to promote his general well-being.

THE LANCET.

LONDON: SATURDAY, OCTOBER 5, 1929.

MENTAL HEALTH IN 1928.

"Insanity is . . . only a disease like other diseases . . . and a mind diseased can be ministered to no less effectively than a body diseased. But the old conception of insanity dies hard, and its traces are still persistent. The modern conception calls for the eradication of old-established prejudices and a complete revision of the attitude of society."

THIS quotation from the Report of the Royal Commission remains the text of the Fifteenth Annual Report of the Board of Control, Part I. of which has just been published.[1] The sentence would provoke no dissent if the single-lettered word "a" were omitted. Insanity is disease like other diseases, but to call it "a" disease is to overlook the fact that it is nothing specific but due to a multitude of disorders of body and mind. Hospitalisation of all institutions for the mentally afflicted is the Board's great aim, although homes will still be needed for the chronic and infirm cases. Much has been accomplished; much remains to be done. Many institutions still fall short in greater or lesser degree of the standard set by the best, and the best could be still better. Many local authorities take a conservative position towards modern developments; while recognising the reasonableness of a cautious attitude towards new "cures," the Board feels strongly that in treating mental disease experiments should be made freely. Even if statistical results are disappointing, the patient and his relatives obtain an incalculable psychological benefit from the feeling that everything possible is being done, and that there is always hope. The only direction at present in which there is definite therapeutic advance is the malarial treatment of general paralysis, to which we referred in a recent issue[2] It is a regrettable and rather surprising fact that in all other departments of mental disease the average recovery-rate—30·84 per cent. for last year—has remained practically constant over a long period of years. This may be partly due to a higher standard of recovery nowadays, but whatever its cause, it must combine with the greater longevity of chronic cases, and the increase in general population, to produce a steady increase in the number of persons under care. The average annual increase of such persons is, in fact, just over 2000, and the total number on Jan. 1st, 1929, was 141,080. The Board points out that this increase by no means indicates an alarming increase in mental disorder, but it does mean a disquieting shortage of accommodation. To increase the number of beds in an existing institution, or to build a new one, may cost £500 per bed, and makes a heavy demand on the finances of the local authority. For this reason it is a true economy to spend money on the various hospitalisation schemes which make for the most intensive use of beds already available.

On this ground the Board strongly deprecates understaffing on either the medical or the nursing side, and welcomes the progress made during the year in the provision of restful and comfortable accommodation for nurses. It regrets the unsettled conditions of training in mental nursing and the difficulty of securing women nurses of good type and anxious to seek a qualification. It notes, however, the paradox that hospitals which set a high standard have the least difficulty in obtaining probationers. It urges the appointment, wherever possible, of a special occupation officer, citing the experience of the Dutch hospitals, Gantpoort and Maasoord, which emphasises afresh that there are many patients, including violent types, who benefit considerably and become far more amenable if trouble is taken to find the occupation best suited to the individual. This task demands experience, skill, and time, which an overworked medical and nursing staff cannot be expected to devote. Another measure which can be confidently expected to reduce the need for beds is a well-staffed out-patient centre. To overcome the foolish tendency to postpone treatment until concealment is impossible, the Board invokes the coöperation of the press. Adequate advance in new methods cannot be made without coördination, and the Report urges local authorities to encourage scientific research in such therapeutic reinforcements as ultra-violet and other light treatment, electrotherapy and hydrotherapy. Much of the work which is already being done would have its value greatly enhanced if the results were recorded under a uniform and approved schedule. A committee of the Medical Research Council is taking steps to associate certain mental hospitals in a scheme of this kind. The Board notes with pleasure an increase in the number of mental hospitals that are linked up with medical schools, for it feels that nothing could be worse for psychological medicine than any tendency to divorce it from other branches of medical study. Another development worthy of every encouragement is the organisation by the Royal Medico-Psychological Association of study tours of foreign hospitals. The Board suggests that a report of these tours by the Association would be of great value to those who are unable to participate in them. One suggestion coming from abroad is the appointment of a skilled psychiatrist as after-care officer. This experiment has been made with great success at Maasoord, Rotterdam, which has a markedly lower readmission-rate than other Dutch hospitals which have no such official. Another valuable appointment would be that of a social worker as almoner, to supplement the admirable work which is now done by the Mental After-care Association in tempering for the discharged patient the shock of return to a stressful and often temperamentally difficult workaday world. But when all is said and done it is the accumulation of the chronic insane, especially cases of dementia præcox, which constitutes one of the urgent social problems of the day. The cost and the wastage is terrific. Concentrated effort is needed—and will justify large expenditure of public money in research; research, that is to say, into causes, into a group of therapeutic methods, intensive experiment with occupation therapy, and any other kind of therapy, so long as conducted in a limited field and on lines that render it possible to estimate results. It would, we think, be worth while to offer valuable prizes for essays outlining details for research; not for the research itself, but for grounds for expecting useful results from further study. The public wants awakening to the gravity of this problem.

The outstanding events of the year in the field of mental defect were the passing of the Local Government Act and the publication of the Report of the Mental Deficiency Committee. The Board's Report reviews the relevant sections of the Act and points out the benefits which may be expected to result from uniform control. It is hoped that both ascertainment and classification will be greatly improved. The figures given in the Wood Report make it highly

[1] H.M. Stationery Office. 1929. Pp. 93. 1s. 9d.
[2] THE LANCET, August 24th, p. 402.

probable that the increased accommodation made available by the Act will still be inadequate. The older type of poor-law institution is only suitable for the untrainable and unemployable classes, but a great many defectives of this type are still occupying space in mental hospitals, and their transfer to a poor-law institution would release beds urgently required for curable cases of mental disease. For the educable defective new colonies are still badly needed, and little was done during 1928 to meet the shortage; Hampshire and West Riding County Councils opened new colonies, and three other new institutions also became available. Several designs for big schemes are now, however, well advanced, and the Board is of the opinion that every local authority ought to have a central colony or a share in a colony where there is enough land for workshop and field employments and recreation. Although the actual amount of new accommodation—625 beds—falls so short of urgent requirements, yet it is nearly double that of 1927, and a large number of local authorities are taking steps in the face of many difficulties to fulfil their statutory obligations. While taking a guarded attitude towards sterilisation, the Board definitely recommends the prohibition of marriage of defectives. Shortage of accommodation, therefore, the key-note of the reports on mental deficiency for many years past, is still the principal trouble to-day, and has extended to mental hospitals also. Most of the hospitals are overcrowded and many have already been expanded to the uttermost limit. The position is serious; a modern mental hospital takes time to design and construct, and no local authority can afford to postpone serious efforts to meet the problem until the strain on their existing hospital has become acute.

CURES AND PREVENTION.

THE author of a new American handbook on "The Common Head Cold and its Complications"[1] explains that if the information he has to offer is not altogether satisfactory "it is because our scientific knowledge is not in all respects final." As Regius Professor of Medicine at Oxford Sir FARQUHAR BUZZARD would doubtless agree with this statement, but in the address published on p. 695 he suggests that we know enough about colds to feel hopeless about them. The common cold is not curable, he said; and as for prevention, the necessary measures would be so troublesome and onerous that the public would never put up with them. He advised his audience (in the manner of Mr. BELLOC) to answer, as they took their fees, there is no cure for this disease, Henry will very soon be well.

While it is quite true that the symptoms of infectious diseases are mostly the signs of a battle between parasite and tissues, we cannot agree either with his statement that "all the material facts about" the common cold are already known, or with his pessimistic outlook that no cure for that complaint will be found as relatively effective, for example, as antitoxin in diphtheria. It seems evident that there is some "material fact" about these infections of mucous surfaces which has not yet been ascertained. No one so far has hit upon any theory or any empirical procedure which will enable us to kill the microbes or prevent their injurious action on the tissues. But no cheerful believer in the intelligence of man can seriously doubt that there is a solution somewhere. Bacteriology is only just getting into its stride and immunology has hardly begun to totter on its first steps; the golden age of catarrhs is surely only just round the corner.

Meanwhile what is to be done? Sir FARQUHAR BUZZARD urges very truly that if we cannot cure a disease we should give our minds to prevention, and that we should frankly recognise that some conditions, such as the paralyses of poliomyelitis, are in effect incurable. With such doctrine no one can possibly quarrel. Medicine has always put prevention in the front of its programme, its main triumphs are hygienic rather than therapeutic, and it is along these lines that it will progress. But it remains true, and probably will always remain true, that the daily work of the medical man will be chiefly therapeutic. Prevention will sometimes fail, and the diseases of old age are, as far as we know, unpreventable; with our ageing population they will become relatively more frequent. One has, too, to recognise that a man or woman who is incurably diseased is by no means as good as dead. From their own point of view, and often enough from the world's point of view, they are as much alive as anyone else, and much of the kindly art of medicine will, we hope, always be devoted to making the rest of their pilgrimage as easy and effective as it may be. It is questionable whether medical men ever do anything more really useful, though the theory and practice of helping those who are irretrievably maimed does not perhaps play any large part in our curriculum. Medicine is not wholly materialistic: it would discharge its functions sadly if it had nothing in view but a healthy body. Let us have that by all means if we may, but if we cannot let us bear in mind that comfort and cheerfulness do many people good besides the sick man. When prevention and cure have failed, there is much left to do which is worth doing.

[1] By Walter A. Wells, A.M., M.D., F.A.C.S., Professor of Otolaryngology, Georgetown University, Washington, D.C., with an introduction by Hugh S. Cumming, M.D., Surgeon-General United States Public Health Service. New York (obtainable in England from Messrs. Macmillan & Co., Ltd.). Pp. 225. 10s. 6d.

WORLD HEALTH ORGANISATION.

COMPETENT observers of the Tenth Assembly of the League of Nations have detected in its proceedings an unusual insistence on active progress and increased achievement. The note was heard in all directions, not only on the promotion of peace and disarmament, but in the discussions of such diverse matters as tariff barriers, international communications, child life protection, control of drugs of addiction, and even the internal organisation of the secretariat. Among them the Health Organisation of the League—a term which includes the medical director and his staff, the health committee, and advisory health council—came under review in its place. If we may judge from the discussion of its work in the Second Committee, reported in the *Assembly Journal* of Sept. 18th, and by the subsequent approval by the Assembly of the report submitted to it by the Czecho-Slovakian delegate, Mr. FIERLINGER, it emerged not only with credit, but with as much enthusiasm as the Assembly can be expected to show over an undertaking which has so far gone its way without producing political repercussions or national controversies. The output of the Organisation in terms of its publications continues to grow, while the steady increase in the variety of subjects with which it deals is made evident when the last annual report of the medical director is contrasted with those which he presented only a few years ago. The compilation and issue of returns about notified infectious diseases and similar data from the different countries of the world continue both at

Geneva and at the branch health office of the League in the Far East, which has been established at Singapore. The International Health Year-book, comprising notes of the principal happenings in different countries, has taken a new form and its last issue has been so enlarged that it makes quite a formidable volume of reference. New handbooks have been prepared regarding vital statistics and the public health administration of different countries.

In the more important field of international expert study some notable contributions have lately been made to the science and practice of preventive medicine, particularly the reports of the International Conference on sleeping sickness [1] and on the radiological treatment of cancer of the uterus.[2] To these should be added a comprehensive survey which has just appeared of the measures taken in different countries for the welfare of the blind. The rapporteur laid special stress on the progress of combined investigations into particular aspects of syphilis, malaria, and the causes of infantile mortality. The successive conferences on the first subject have focused national studies of the technique of serum reactions, and have undoubtedly led to greater accuracy and comparability of all the diagnostic tests employed for syphilis. A similar comparison of the efficacy of modern preparations in the treatment of this disease is now proceeding on a large international scale. The inquiries which have been pursued by the Malaria Commission, extended in the present year to India, have resulted in a series of authoritative reports which are doing much to determine the wise selection and economic application of different antimalarial measures according to the circumstances and resources of the countries affected. In the case of infantile mortality a standard pattern of inquiry has been set up which each country can adopt, and those countries which have already adopted it have found that it affords an invaluable guide and stimulus to national effort. Claims such as these made on behalf of the League's work are substantiated by the facts, and their recognition should be gratifying to the medical officers of our own Ministry of Health and other British technical representatives who have not only taken their share in the conferences and committees, but themselves have provided a very essential part of the material and research which has made these several investigations fruitful. In the debate in the Second Committee some delegates advocated the still greater increase of investigations of this kind—for example, the institution of an intensive world study of influenza—while others hinted at the danger of the Health Organisation trying to do too much without a more systematic programme. Both contentions have force, but provided the inquiries are well thought out by the responsible body, the Health Committee, before they are put in hand, and the principle is followed that there should be only one quality of work—the best—their increase should be universally welcomed.

At the Assembly the public health work of the League has now come to make an exceptional appeal on the ground of the universality of its application. While disarmament, tariffs, and opium control affect some nations vitally but leave others indifferent, there is no country in the League which cannot benefit by consultation on one or other of its health problems. In some instances it is evident that these are political and administrative rather than purely technical. The recent application of Greece to the League for a Commission to advise on the reorganisation of its sanitary services is an instance in point. This Commission, of which Sir GEORGE BUCHANAN was the British member, laid down a scheme which the Prime Minister of Greece informed the Assembly that his Government has already adopted. In pursuance of it the services of one of the principal medical officers of the League, Dr. NORMAN WHITE, have now been lent to the Greek Government, while Mr. VENIZELOS himself, in order to further the scheme, has added the portfolio of a Minister of Health to his other offices. The League has just received a similar request from Bolivia for advice on the organisation of its health administration; while much attention was attracted at the Assembly to communications received from the Government of Nankin, as a result of which the medical director, Dr. L. RAJCHMAN, with other members of the secretariat, will almost immediately visit China and the Chinese ports. The Assembly indicated its satisfaction with the principle of these requests by voting a special credit for the purpose, additional to the normal public health budget and to the income furnished by the Rockefeller Foundation. From the point of view of hygiene, as well as of its effect in extending the influence of the League of Nations, the results of these new and highly responsible undertakings will be followed with attention and interest.

[1] League of Nations Health Organisation Report, C.H. 743. Report of the Second International Conference on Sleeping-Sickness, Paris, November, 1928.

[2] Ibid., C.H. 788. Reports submitted by the Radiological Sub-Commission, Geneva, June, 1929.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS.

THE Board of Trade has approved the scheme submitted for its approval last March, and on Sept. 13th the incorporation of the British College of Obstetricians and Gynæcologists was completed and with it the inauguration of a movement for the advance of the twin sciences of obstetrics and gynæcology which should turn to great good. Chief among its objects is the design to increase the prestige of this branch of medicine, to provide a better training and a severer test for medical students in these subjects, along with fuller opportunities for learning them. In giving our support to the movement in the spring we pointed out then what compelling force was given to it by the continuance of the high rate of mortality in childbirth. We recognised in passing the validity of the practitioner's plea that it is economically impossible for him to follow out the rules which his teachers impress upon him for the conduct of labour. These are evils whose roots go deep into social problems, but the work of the new College should be helpful in their solution. Following on the incorporation of the College the first meeting of the Council was held in London on Sept. 25th, when Prof. W. BLAIR BELL (Liverpool) presided and the following were elected members of the first general Council. For London: Dame Louise McIlroy, Dr. T. Watts Eden, Dr. J. S. Fairbairn, and Mr. L. C. Rivett. For the Provinces: Prof. A. Donald (Manchester), Sir Ewen Maclean (Cardiff), Prof. Carlton Oldfield (Leeds), Prof. M. H. Phillips (Sheffield), Prof. Beckwith Whitehouse (Birmingham), Dr. Farquhar Murray (Newcastle), and Dr. Leyland Robinson (Liverpool). For Scotland: Prof. R. W. Johnstone (Edinburgh), Prof. Munro Kerr (Glasgow), Dr. W. F. T. Haultain (Edinburgh), and Dr. R. A. Lennie (Glasgow). For Ireland: Prof. C. G. Lowry (Belfast), Dr. Bethel Solomons (Dublin), and Dr. T. M. Healy (Dublin). Under Article 40 of the Constitution the following were coöpted on the Council for the purpose of organisation—

viz., Prof. R. J. Johnstone (Belfast) and Dr. Eardley Holland (London). Proceeding to the election of officers, Prof. Blair Bell was chosen president, Prof. Munro Kerr vice-president, Dr. Comyns Berkeley (London) treasurer, Prof. W. Fletcher Shaw (Manchester) and Dr. H. Russell Andrews (London) secretaries. Sir Francis Champneys was appointed vice-patron of the College in recognition of his service to obstetrics and gynæcology, and especially to the College during the process of its formation. Finally, the following were elected members of the Executive Committee—viz., Prof. Blair Bell, Dr. Comyns Berkeley, Prof. Munro Kerr, Mr. Rivett, and Prof. Fletcher Shaw.

Annotations.

"Ne quid nimis."

MEDICAL DEFENCE.

THE tendency of recent years to add more and more scientific tests and standards to the practice of medicine has had at least one real disadvantage to the medical profession. It has made it increasingly difficult to get patients to appreciate the fact that medicine can never be an exact science. They are every year more apt to judge the results of treatment by an arbitrary and sometimes grotesque standard, usually infused by natural but undue optimism. If the standard is not reached they promptly blame the doctor, and woe betide him if he has omitted to call in the aid of any modern scientific measure applicable to the case. The absolute necessity of a precautionary X ray in any case of injury which might conceivably involve fracture has been urged again and again, yet Sir Herbert Waterhouse, in his presidential address at the annual general meeting of the Medical Defence Union on Thursday of last week, had to report once more that most of the cases causing his Union anxiety had been those involving failure to advise radiography. "Unless we are in a position to prove," he observes, "that such advice has been given, the defence of our member becomes a matter of great difficulty or even impossible." There are, however, other risks attendant upon the practice of medicine. As the solicitors, Messrs. Hempson, point out in their report, there is the unscrupulous type of person who thinks that he may escape payment if he only voices his dissatisfaction loudly enough and threatens to charge a professional man with negligence. Against such there is no immunity, either in consulting work or in the public health service. There is also the possibility in public health or other whole-time employment of disputes with employers or complaints by ratepayers or other members of the public. The risk is certainly in the minds of a growing proportion of the profession, and we are glad to learn that the membership of the Medical Defence Union now stands at 15,945 and that its financial position has never been better. Its work covers a very wide range of service to medical men and women; defence against action plays a relatively small part. The counsel of experienced advisers can often avert proceedings, and prompt attack may be the best form of defence. The Union may be said to handle every variety of difficulty connected with the practice of medicine. Perhaps the most outstanding case of the year was that, reported in our columns at the time,[1] in which a medical man was held liable for the hire of a car ordered by him for the transport of a patient. This was one of the two cases in which the Union suffered defeat, and at any rate should do service to the profession by calling attention to the importance of disclaiming personal liability when giving an order on behalf of a patient. In the other case the failure was due to the injudicious conduct of the member after action had been threatened; this illustrates again the importance of consulting the Union early and of abiding faithfully by its advice throughout. Another feature of the year's work was the action taken to maintain the professional standard by referring to the General Medical Council the conduct of certain registered practitioners. In every case the Council found the charge proved, and in one case ordered the removal of the name from the Register. More cases than usual have been settled out of court because the Union had no hope of successful action. There were nine of these cases: two involved the loss or partial loss of the sight of one eye, one owing to instillation of the wrong drops and the other to leakage of anæsthetic; three were cases in which a swab or instrument had been left in the body at operation; one patient had been burned during treatment by diathermy; in two cases there were obviously mistaken diagnoses under circumstances in which it might have been difficult to prove that reasonable skill and care had been exercised, and in the ninth case the practitioner had been carried away by sympathy for relatives and had signed an urgency certificate without actually examining the patient. The policy of the Union, however, is strongly opposed to the settlement of claims out of court, and every possible avenue of defence is thoroughly explored before compromise is admitted. In the last 15 years 1641 cases have been handed over to the solicitors by the Council of the Union and the total cost of subsequent litigation was £14,676. In the 63 heaviest cases the average cost per member was about £381. It seems almost incredible that there are still thousands of practitioners who are unwilling to pay £1 a year or a life sum of £25 to insure against this risk. In the words of the solicitors: "It is no exaggeration to say that no medical man is free from this risk, and that every case he attends is a source of possible danger . . . however small the risk the results may be disastrous and peace of mind is cheap at £1 a year." Membership of one of the defence societies is the only way of securing it.

[1] THE LANCET, 1928, ii., 1145, and 1929, i., 1258.

FLUKE INFECTIONS OF MAN'S BILIARY PASSAGES.

DURING the past year some significant observations have been made in Russia on infection by flukes of the bile-ducts and gall-bladder of man. P. Sdrudowski, of Baku, on the Caspian Sea, and his assistant, F. Jaguboff, have reported that, in fæcal examination of 900 persons, ova of liver-dwelling flukes were found four times—those of *Fasciola hepatica* and those of *Dicrocoelium lanceatum* each being noted twice. All four patients had such hepatic symptoms as jaundice and a large and tender liver. K. Plavtov, of Nakhi-Chevan, at the head of the Sea of Azov, reports on a herdsman who passed eggs of *F. hepatica* without symptoms, and on eight other persons passing those of *D. lanceatum*, of whom one at least was ill with an intense anæmia, but without anything to point to the liver as a seat of infection. Again, N. Karibow, of Tiflis, saw two boys of about 11, from different Georgian provinces, of whom one was without symptoms and the other suffered from biliary colic, while in both the eggs of *F. hepatica* could always be found not only in the fæces but by duodenal catheter. Since in most of these cases where fluke's eggs were discovered symptoms of hepatic disturbance were present, there is little doubt that true parasitism existed. That this need not be so is evident from observations by S. M. Koulaguine,[1] who was struck by finding that of 40 persons in whose fæces he found eggs of these parasites, 38 seemed perfectly healthy. He suspected, therefore, that the trematode eggs which he had seen had been swallowed with food, and he was indeed able to observe instances in which a meal of boiled liver infected by these two flukes resulted in the evacuation of their eggs in the fæces over the next three or four days. He confirmed this observation on his own person, having first satisfied himself that he was free from

[1] Russian Jour. Trop. Med., 1929, vii., 131.

the infections. Even when liver was boiled, roasted, or baked the eggs appeared to be unaltered, and it may be concluded that with imperfect cooking eggs may be passed alive in the fæces of the man who has swallowed them. It is clear, then, that when hepatic symptoms are absent a diagnosis of infection by these flukes, based on the finding of their eggs in the fæces, may well be a mistake. They should be sought for repeatedly by duodenal catheter, unless the ingestion of infected liver can be completely excluded. This observation should bring about a careful scrutiny of cases of supposed infection by these occasional parasites of man.

PERCEPTION OF MOVEMENT.

IT is supposed by some that the perception of moving objects, together with a crude light sense, represents a primitive type of vision, in some respects differing from the vision of stationary objects. In order to throw light on the problem some experiments have been carried out [1] by Mr. Myer Salaman, M.A., on the vision respectively of moving and stationary objects in the periphery of the visual field. The first experiment was planned with the object of discovering whether, when a moving object is observed peripherally, a perception of discontinuous change of position is ever obtained without perception of movement. An apparatus was employed by means of which the speed of a horizontally moving object and its angle of eccentricity could be exactly regulated, and numerous reports were obtained from six trained observers. All observers complained of the extreme vagueness of the perceptions, but the majority agreed in reporting change of position of the spots at eccentric angles at which no movement was perceived. This applies most decidedly to slow movement of under 0·2° of visual angle per second. When the rate of movement was more rapid it was, of course, more easily perceived. A second experiment had for its object to discover whether discontinuous change of position of an object, observed peripherally, is ever perceived as movement. In this experiment half of the observers never obtained any illusory perception of movement at all. Of the rest the only ones who gave any but negative results were those who had knowledge of previous work on the subject and of the nature and purpose of the experiment. The conclusion suggested is that the illusory perception of movement was in these cases subjective and psychological, not the outcome of any physiological process connected with the retina. The author is far too cautious to deny what others have maintained—that there may be a special physical basis for the visual perception of movement, but at any rate he shows that no conclusions can be drawn from experiments on the subject in which the psychological factors are ignored.

THE DOSAGE OF INTRAVENOUS GLUCOSE.

THOUGH intravenous glucose is recognised as a serviceable agent in conditions of exhaustion, toxæmia, or dehydration and is widely used, dosage and general technique are apt to be rather casually determined. Dr. P. Titus and Mr. H. D. Lightbody, working in the Department of Obstetrics and Gynæcology of the St. Margaret Memorial Hospital at Pittsburgh, set themselves to ascertain the quantity, concentration, and rate of injection of glucose which would yield the best results. They were chiefly concerned with the toxæmias of pregnancy and sundry gynæcological conditions, but their conclusions[2] have wide medical and surgical applications. They plead at the outset for as much care in calculating the dose and in controlling the administration of intravenous glucose as is used in the giving of any potent agent. They attribute clinical failure and "reactions" to faulty technique or dosage, and remark that ill-effects would certainly be observed if in morphine therapy the dosage was casually arrived at anywhere between grs. 5 and one-hundredth of a grain. To establish their data the authors seized on the cardinal fact that intravenous glucose causes a rise in blood-sugar up to a certain point, with a subsequent sharp and inevitable fall. This fall is, of course, of the highest importance, since hypoglycæmia is probably the cause of the convulsive reactions reported from time to time. It is almost certainly due, according to the charts presented, to an over-stimulation of the pancreas by the excess glucose and an over-production of endogenous insulin. Proceeding along clinical experimental lines the authors tackled separately the three problems of quantity, concentration, and rate of injection. The first consideration is the therapeutic dose. As a general rule probably too little is given. Indeed underdosage, combined with a too rapid rate of injection, may well account for the disrepute into which glucose falls from time to time. On the other hand, overdosage will lead, as has already been stated, to a paradoxical hypoglycæmia with the possibility of convulsions. It seems that the best quantity for an average sick adult is 75 g. The concentration of the solution should be decided upon after a review of the clinical condition. For example, in pneumonia when the patient has a weakened heart muscle, strongly hypertonic solutions should be chosen, so as not to overload or strain the right ventricle; while in a case of dehydration from vomiting and diarrhœa a weaker hypertonic solution is preferred. It will surprise many English readers to learn that 50 per cent. is recommended for the stronger, 10 per cent. for the weaker solution. For the rate of injection the authors fall back on the determinations of R. M. Wilder and W. D. Sansum,[3] who concluded that the rate should not exceed 0·8 g. of glucose per kilo of body-weight per hour. This is very much slower than the rate used in many hospitals and the disadvantages of rapid injection should therefore be emphasised. A certain sequel is the immediate loss of the substance by heightened urinary excretion before it has had time to act; a probable sequel is an over-stimulation of the pancreas, leading to endogenous over-production of insulin similar to that following overdosage. According to Dr. Titus and Mr. Lightbody, a basis for the administration of glucose to adults should be 75 g. of glucose in 300 c.cm. of water given over a total period of one and a half hours. The injection need not be continous but may usefully be given by instalments throughout the day. In children proportionately smaller quantities of sugar should be given but the time of injection should not be reduced.

CHANGES IN LOCAL GOVERNMENT.

THE end of September saw the expiration of the period allowed to the county councils and county borough councils for the formulation of their plans for taking over the public health and administrative work of the boards of guardians. On the last day of March next those bodies will automatically be dissolved and their successors will receive a large addition of dignity and importance, tempered by the obligation to perform extensive and often complicated functions familiar, in most instances, to a minority only of their members. So great a change in our system of local government entails careful and minute arrangements for smooth working, but in the main they must necessarily bear a family likeness. To what extent they differ it is impossible to say, since many scores of schemes have had to be prepared. The general outlines are, however, familiar. From April 1st the councils of counties and county boroughs—that is to say, all the great towns, and some that are not so great—will be responsible for poor-law finance, indoor and outdoor relief, and the maintenance of poor-law institutions, so long known as workhouses and poor-law infirmaries.

This is a heavy load of work to place upon the shoulders of authorities which grow busier every year,

[1] Medical Research Council. Some Experiments on Peripheral Vision. By Myer Salaman. H.M. Stationery Office. 1929. Pp. 47. 2s. 6d.

[2] Amer. Jour. Obst. and Gyn., August, 1929, p. 208.

[3] Arch. Int. Med., 1917, xix., 311.

but the Local Government Act of 1929 provides for it to be met by delegation. Even as the councils appointed education committees when they took over the functions of the school boards, so will they now appoint public assistance committees that will absorb the paid officials of the guardians. These bodies will have the general supervision of all poor-law work, subject, of course, as the education committees are, in matters of principle, to the approval of the councils. The composition of these committees is of great practical importance. They may consist only of elected councillors, and in some places that course has been followed, or they may include coöpted persons to the extent of not more than one-third, some of whom must be women. The borough public assistance committees may and, as a rule no doubt will, appoint subcommittees consisting mainly of elected councillors, but here again, if outsiders are coöpted, women must be among them. In the counties subcommittee are compulsory, for the obvious reason that it is impossible to administer relief from a single centre. These guardians' committees will do work for which local knowledge is necessary, such as interviewing and investigations. They will consist of members of the subsidiary councils, in the area, nominated by those councils, members of the county council representing the area, and male and female coöpted members—this is compulsory—to the extent of not more than one-third. The inclusion in this category of as large a number as possible of the old guardians and others with poor-law experience is very necessary, and even where elected councillors only have been chosen it is probable that some of them are, or have been, members of boards of guardians.

It is probable that, in most instances, the difficult and complicated question of the most effective means of coöperation between the poor-law hospitals and the voluntary hospitals has, as yet, been settled only in broad outline, even if so much has been done. The details of such coöperation are necessarily intricate, and whatever is arranged must needs be subject to the test of experience. The primary object must be to prevent waste and overlapping, and that crowding of one institution while a neighbouring one has beds to spare which has been so serious a weakness of the old system. Not less important will it be to create something like a uniform standard of efficiency, which was virtually impossible so long as we had two hospital systems existing side by side, one of which was, so to speak, under a cloud. From the point of view of the public health the councils have a great opportunity and, with goodwill on both sides, the voluntary hospitals ought to be the stronger for the adoption of rationalisation in quite a new sphere.

ANAEROBIC TOXÆMIA IN ACUTE OBSTRUCTION.

MICRO-ORGANISMS, like people, have their phases of popularity. The bacillus of gas gangrene, for instance, was long regarded as of no significance except in foul wounds, but M. Weinberg,[1] in France, followed by B. W. Williams [2] in this country, has endeavoured to establish its importance in acute intestinal conditions, and in America it is being advanced as a cause of pernicious anæmia. As regards its action in obstruction of the intestine and acute peritonitis, Weinberg has urged that it produces an infection, and Williams that it forms toxins which are absorbed. In a case lately published by J. Sailer, G. M. Laws, and J. Eiman [3] the afebrile collapse of a woman patient after appendicectomy suggested to the authors the toxæmia of "gas gangrene." On her death *B. welchii* was found in the small intestine and proved lethal to rabbits. The reporters of this case apparently believe it to be unique, but it is of the type described again and again by Weinberg and Williams. The whole theory of the absorption of this toxin from the gut in acute obstruction has lately been traversed, however, by A. W. Oughterson and J. H. Powers,[4] who have repeated Williams's experiments on a much larger scale. Eleven dogs were given acute obstruction and the contents of their small intestines were filtered and injected into the peritoneal cavity of mice. An equal number of mice received the filtered intestinal contents plus a *B. welchii* antitoxin of established quality, and the results seemed to be quite arbitrary. Few mice died, protected or unprotected; in many cases more protected mice died than unprotected. A second series of dogs were then given acute obstruction and the intestinal contents were this time injected into rabbits. It was hoped to find evidence of anti-hæmolysin to *B. welchii* hæmolysin, if it was present, and as a control a sample of known *B. welchii* toxin was similarly injected. The results were negative, however, save in the control rabbit. Lastly, cats were given acute obstruction, and it was found that no relief of symptoms was afforded in the group to which antitoxin was given. The usefulness of the antitoxin treatment of acute obstruction in practice has been emphasised by many writers, including J. O. Bower and J. Clark,[5] but the original theory of intestinal absorption requires confirmation before it can be held to be established. The therapeutic value of the method has not so far been denied in any publication, but the theoretical basis of the method, already resting on two contradictory arguments, is decidedly uncertain.

[1] Ann. de l'Inst. Pasteur, 1928, xlii., 1167.
[2] Brit. Jour. Surg., 1926, xiv., 295; THE LANCET, 1927, i., 907.
[3] Amer. Jour. Med. Sci., 1929, clxxviii., 309.
[4] Cushing Birthday Volume, 1929, p. 1085.
[5] Amer. Jour. Med. Sci., 1928, clxxvi., 97.

THE RIPENING OF BEEF.

IT is estimated that those English butchers who supply the wealthier classes sell only 25 per cent. of a beef carcass for roasting purposes, the remainder being destined for stewing, boiling, or pickling. In industrial districts over 54 per cent. of the carcass is sold for roasting, the cheaper and usually tougher joints, such as silverside, topside, aitchbone, and middle ribs, being disposed of for this purpose as well as the sirloin and fore-ribs. It is obviously desirable that the palatability of the cheaper joints should be raised to as high a standard as possible. With this end in view the Department of Scientific and Industrial Research recently undertook an investigation on the effect of hanging, or conditioning, upon the palatability of meat, and their report on the subject has just been issued.[6] The investigation consisted essentially in a comparison of the palatability of samples of hot and cold roast beef derived from carcasses which had been stored at suitable temperatures for varying lengths of time. The palatability was assessed by teams of experts who allotted marks to each sample for such qualities as tenderness, flavour, texture, juiciness, and colour. Joints from one-half of each carcass were cooked and tasted three days after the slaughter of the animal; the other half of the carcass was stored at a temperature of 41° F. for a further 4 or 14 days, after which interval corresponding joints from this half were similarly cooked and tasted. In almost every case there was a marked progressive improvement in the palatability of the samples with the increase in the period of storage, due mainly to an increase in tenderness. The increase in tenderness was more pronounced with the coarser joints than with those of the first quality, and was sufficiently constant and striking to lead the authors of the report to suggest a scheme for the conditioning of beef at central depôts such as municipal abattoirs. Under such a scheme the dressed carcasses would be cooled for one to two days at a temperature of 31–33° F. (short of actual freezing) and then stored for 10 to 12 days at a temperature of 36–38° F. Before removal to the retail shops, or at least before being cut up into joints, the carcasses should be stored for about 24 hours at ordinary temperature, or in summer at

[6] Food Investigation, Special Report, No. 36. Post-mortem Changes in Animal Tissues: the Conditioning or Ripening of Beef. H.M. Stationery Office. 1929. Pp. 64. 2s.

some controlled temperature round about 40–45° F. The possible objections to a procedure of this kind, such as increased liability to putrefaction and diminished attractiveness of the joints by loss of bloom and sweating of the surface, are shown to be without foundation, providing due attention is paid to the temperature and degree of humidity of the storage chambers. Now that it has been proved that beef, and especially the cheaper cuts, can be rendered more palatable by the process of ripening or conditioning, what chance is there that this process will be applied generally to the meat prepared in this country? The first and most important step in this direction is the creation among the public of an appreciation of conditioned meat and a demand for it. In the opinion of the writers of the report the coöperative societies have unique opportunities for educating the public in this matter, for in the majority of cases they already possess, or contemplate the erection of, abattoirs fitted with cold storage accommodation where the conditioning could be carried out. Every member of the meat-eating population who is informed of the facts could help to create the necessary demand by reiterated requests to his own butcher for the supply of conditioned meat.

THE RADIUM COMMISSION.

It is now six weeks since the Radium Commission was appointed, and although the holiday season has intervened good progress has been made with work preparatory to the important matter of distribution. It is unlikely that more than three grammes of radium will be available in suitable containers before the end of the year, and it will task the National Physical Laboratory at Teddington, to which the supplies are to be consigned for safe keeping, to test and measure this quantity. In addition it is hoped that a loan of four grammes in the form of a so-called bomb may be available on loan from the manufacturers, in the same way as the Haut-Katanga Mining Company has for a long time past loaned to the Institut du Radium and other research centres in Paris a large quantity of the radium element at its disposal. No decision has yet been taken as to the particular institutions to which the radium will be distributed, although it has been agreed in principle to give preference to centres where treatment is combined with teaching and research. The Commission will, of course, require detailed and uniform records to be kept of the use to which the radium is put, especially as the loans will be made on terms which will simply recoup the Commission for the expenses incurred. Prof. Sidney Russ, D.Sc., has been appointed scientific secretary to the Commission, the offices of which are at 5, Adelphi-terrace, London, W.C. 2, where communications should be addressed to the secretary.

THE SEQUELS OF TOXÆMIC PREGNANCY.

It used to be said at one time that there is no great risk of permanent damage after a toxæmic pregnancy, and as recently as 1924 Whitridge Williams in his book, "Obstetrics," stated that one attack of eclampsia confers immunity against further attacks in subsequent pregnancies. Among writers who have lately contradicted this is C. H. Peckham,[1] who found that 23 per cent. of 77 cases of eclampsia treated at the Johns Hopkins Hospital had chronic nephritis when examined a year later. Equally remarkable figures have been brought forward by James Young [2] in Edinburgh and by G. F. Gibberd [3] at Guy's Hospital. Young found that more than half the pregnancies which followed a toxæmic pregnancy were pathological, but noted that the incidence of chronic nephritis after a toxæmic pregnancy was low—namely, 3 per cent. after eclampsia and 8 per cent. after albuminuria. He rejects the common view that there is a definite type of toxæmia, sometimes called the nephritic type, and he thinks that all types of late pregnancy toxæmia may be recurrent. Dr. Jessie Sym in our present issue records a further investigation of the series of cases that Young examined, and gives some more statistical details. These show that the danger of subsequent toxæmic pregnancy is considerably greater after "albuminuria of pregnancy" than after eclampsia; thus she finds that 27 per cent. of subsequent pregnancies after eclampsia are toxæmic and 49 per cent. after albuminuria—not to mention many others in which abortion takes place in the early months. Twenty-five of the women in Peckham's series were under observation in their next pregnancies and 14 (56 per cent.) of these proved pathological. Gibberd regards all first attacks of albuminuria in previously healthy patients as due to a primary toxæmia, any renal insufficiency being purely secondary. In estimating the fate of ten such patients he says that one will suffer so much damage to the kidneys that she will develop a frank chronic nephritis, whilst four will recover their renal function completely and afterwards have normal pregnancies. The remaining five—i.e., half those who originally had toxæmia—will, he thinks, have a recurrence of albuminuria fairly consistently with all subsequent pregnancies. Although their kidneys are not obviously damaged they have nevertheless a permanent occult nephritis and will show signs of insufficiency when put to the strain of pregnancy—"the most delicate test of renal function that we possess." It has been shown that the length of time the initial toxæmia lasts is of considerable importance in deciding whether occult nephritis will follow, and although, as Gibberd rightly points out, "this is not the whole question," it is reasonable to conclude that signs of toxæmia during pregnancy should be treated energetically without delay. Failure to react to treatment is an indication for ending the pregnancy, whilst in future pregnancies the prognosis must obviously be guarded and careful watching of the patient will be required.

[1] Bull. Johns Hopkins Hosp., September, 1929, p. 176.
[2] Brit. Med. Jour., 1929, i., 91. [3] Ibid., p. 674.

A CHAPTER IN PUBLIC HEALTH.

Dr. Philip Boobbyer's retirement after 40 years of strenuous work for the citizens of Nottingham is a noteworthy event in the history of British public health. The first half of his tenure of office belongs to the period when sanitation was chiefly environmental and directed towards improved conditions of life for the community as a whole. The report, which he has just issued, deals with the last 13 years during which the measures for the benefit of individual health have taken form. The original maternity and child welfare centre was established in Nottingham early in 1908 by voluntary agency with material assistance from the municipality, and was second only to the St. Pancras centre opened in the previous autumn. Here, as elsewhere, the voluntary scheme assumed official status, and now nearly 50 per cent. of the children born in the city come into touch with the welfare centres and about 10 per cent. of the expectant mothers attend the antenatal clinics. Dr. Boobbyer pays a tribute to the midwives who attend 70 per cent. of the births, and notes the fact that the civic authority does not yet provide or subsidise maternity hospitals. Since 1921, however, no baby has been totally blinded by ophthalmia neonatorum, although 12 cases of impaired vision from this cause have been reported. Antituberculosis work began in Nottingham with the provision of beds at the isolation hospital in 1903 and culminated in the establishment of a tuberculosis dispensary and the appointment of a tuberculosis officer in 1913. The mortality from tuberculosis in the city has fallen by nearly one-half during the last 50 years, the drop being continuous except for the war years, when the setback was chiefly among adult females. In 1928 the deaths from tuberculosis numbered only 8·5 per cent. of the total deaths, and existing institutional accommodation may be regarded as adequate except for advanced cases. Dr. Boobbyer considers that the venereal disease scheme has reduced the prevalence of syphilis in Nottingham by more

than 52 per cent. but he attributes the lesser grade of success with gonorrhœa to the growing laxity of public morals and the lack of a specific remedy. Since the war the Nottingham Corporation have built or ordered 7000 houses and cleared or adopted schemes for the clearance of nearly 28 acres of slum property. From 1868 to 1912 Nottingham was a pail-closet town; in April, 1912, it was decided to adopt water-carriage, and by the end of 1923 all the 40,000 pail-closets had been converted. The water-supply, which used to be entirely from deep wells and borings in the Bunter sandstone, with a total hardness of 18·4 degrees, has been supplemented to the extent of 33 per cent. by a soft moorland supply from the head waters of the Derwent. The new sewerage, when completed, will render Nottingham one of the best-drained cities in the country; a public abattoir and a crematorium are in prospect. Dr. Boobbyer describes the special activities of the war years; how the comparative freedom of the civil population from infectious diseases enabled much hospital accommodation to be put at the disposal of the War Office; the provision of war creches for the children of munition workers, and temporary expedients such as delousing stations and a venereal diseases prophylactic centre for the allied troops. The outbreak of mild small-pox in 1921–22, 113 cases with no deaths, is attributed to the visit of seven Mormon missionaries from Utah. Nottingham has been less severely attacked than many towns by encephalitis lethargica; 74 cases with 27 deaths occurred in 1924–26. Only two cases of post-vaccinal encephalitis have come to Dr. Boobbyer's knowledge since 1920. The survey should interest both Nottingham citizens and others.

BLOOD-PLATELETS IN WERLHOF'S DISEASE.

THE conception of the "morbus maculosus of Werlhof" as an essential thrombopenia has attracted a great deal of attention since it was introduced some years ago by Frank, and has largely influenced the treatment of hæmorrhagic states. The suggestion is that the basis of this particular manifestation of the hæmorrhagic diathesis is a shortage of platelets, either acute or chronic. It was as a result of the observation that splenectomy, both in man and animals, is followed by an increase of the platelets that Kaznelson recommended and practised the surgical removal of the spleen in this condition, and many cases are now on record in which this operation has been followed by the happiest results, though in others it has been a failure. Faith in the theory on which the operation is proposed has been somewhat shaken, however, by the observation that even in cases in which hæmorrhages cease after splenectomy the platelet count, after an initial rise, often returns to its original low level. The whole question has recently been reconsidered by Prof. Roskam, of Liége, who records[1] cases clinically characteristic of Werlhof's disease in which there was no diminution of the platelets, and on the strength of this observation calls into question the whole of Frank's conception of the pathology of the disease. Roskam draws attention to the frequent presence of the "brassard" sign—namely, the occurrence of petechial hæmorrhages after constriction of the arm by the brassard of a sphygmomanometer at a pressure between the systolic and diastolic. This he regards as evidence of capillary damage, and he points out that the amount of hæmorrhage produced in this way may be different in the two arms, which suggests that one portion of the body may be more affected than another. Eventually he comes to the conclusion that Werlhof's disease is more correctly regarded as a disease of the vessels than of the blood itself. That there may be concomitant thrombopenia he does not deny, but he looks on it as secondary to the vascular lesion and not as causative of the hæmorrhages. No attempt is made in this paper to explain the beneficial results of splenectomy in certain cases. It is evident on present knowledge, however, that the original hypothesis of Frank cannot be retained in its entirety, and that the whole question of the hæmorrhagic diathesis and the rôle of the platelets in its causation is very far from being settled.

[1] Le Sang, 1929, iii., No. 5.

THE BALANCE BETWEEN MALARIA AND THE VENEREAL DISEASES.

IF there was ever a time when malaria was of interest to practitioners in the tropics only, that time passed when Wagner-Jauregg began to use it purposefully in the treatment of late syphilis. And now it appears that the interest extends to another venereal disease. When Dr. Max Rosenburg first reached Acre he was surprised to find, he tells us,[1] that some cases of gonorrhœa in Palestine cleared up much more quickly than others. These short cases had, he found, been through a malarial infection, and the association was so constant that it could be used in forming an opinion of probable progress. Perhaps, he suggested, the high temperature of malarial pyrexia weakens the gonococcus, and it may be recalled that John Hunter a century ago noted in his Treatise on the Blood "the suspension or cure of a gonorrhœa by fevers." Spiethof, Leuzman, and Hofmann are quoted by Rosenburg as having in the last five years used artificial malarial infection in the "thoroughly successful" treatment of gonorrhœa in the adult female, and we are familiar in this country with the treatment of such infections of the uterus by the local application of heat. It would be of interest in the first instance to obtain reports from other practitioners in tropical countries. The average length of time spent in hospital by cases of military gonorrhœa is 55·7 days at home, 51·33 days in India, and in West Africa, where the malarial incidence is heaviest, only 46·7 days. These figures might be looked into more closely in the light of Rosenburg's suggestion. He goes on to ask for an explanation of the increasing prevalence in the tropics of neurosyphilis in towns, but not in the villages. He questions the validity of the reasons currently given—viz., over-dosage of salvarsan by native physicians, negative phase and lesser immunity in town dwellers; and a lowering of tone by cocaine, alcohol, and the like, in townsmen newly come from the villages. Here again he regards as significant the greater prevalence of malaria in the villages, where probably 70 per cent. of the inhabitants are infected, while in the towns the proportion falls as drainage and preventive measures advance. Should his view prove correct the future will have in store a great increase in neurosyphilis among the peoples of Asia and Africa as they drift townward.

[1] Arch. für Schiffs-u. Tropen-Hygiene, September, 1929, p. 463.

THE annual Harveian commemoration will be held at the Royal College of Physicians of London on Friday, Oct. 18th, being St. Luke's Day, when Sir Wilmot Herringham will deliver the Oration at 4 P.M., to be followed in the evening by a "general feast" according to the instruction of William Harvey when he gave his patrimonial estate to the College.

ON Sept. 27th the eightieth birthday of the veteran physiologist, Prof. Ivan Pavlov, the Soviet Government, in honour of his work, assigned 100,000 roubles (£10,000) for the re-equipment of his laboratory in Leningrad. In thus recognising Prof. Pavlov's important services to medical science, the Government has disregarded his political views.

Summer Time, which commenced in Great Britain, Ireland, the Channel Islands, and the Isle of Man on April 21st, will cease on Sunday next, Oct. 6th, at 3 A.M., when the clock will be put back to 2 A.M. The hour 2–3 A.M. Summer time will thus be followed by the hour 2–3 A.M. Greenwich time. France and Belgium make the change at the same week-end. Thereafter travellers to the continent will not need to adjust their watches until they reach the German, Swiss, or Italian frontier.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XLVI.

THE MICROSCOPIC EXAMINATION OF FÆCES.

PART I.*—CYTOLOGY AND ANIMAL PARASITES.

WHEN a medical practitioner seeks the aid of a pathologist in elucidating a case by examining the fæces, there are certain conditions which must be fulfilled in order that the result may be of value. It is disappointing to the pathologist, who has spent time and material on the tests applied, to have to submit a negative report couched in some such terms as the following:—

"The specimen contained mucus, a few disintegrated pus cells and some degenerated epithelium; no protozoa or parasites were found, and no pathogenic organisms were recovered."

It is also disappointing to the clinician who receives the report; but, more important, it may be misleading if the result is negative only because the material sent for examination was unsuitable in character or arrived too long after collection, since quite a different report might have been received had the proper conditions been fulfilled. In this and the succeeding communication an endeavour will be made to show what material should be submitted for examination on different occasions, what results may be expected in the report, and what inferences may be drawn from these results, and applied to the management of the case.

Collection of Specimens.

The coöperation of clinician and pathologist is of such importance that a few words first on the selection of suitable specimens for examination are appropriate. To identify and estimate all the bacteria in a specimen of fæces, for instance, is a laborious process which may be undertaken for purposes of research or of training students in bacteriological technique, but the results would be of no practical value or application in the present state of our knowledge. There are certain routine investigations which the pathologist will make on each specimen submitted; but he has a right to expect an indication of the special features to be investigated. A short note of the clinical state and of the suspicions aroused in the mind of the medical attendant should accompany the specimen. The material sent to the laboratory should be as fresh as possible, since most of the parasitic organisms, both protozoal and bacterial, tend to die quickly when cooled to room temperature, and are readily overgrown by mere saprophytes. Further, as most of the bacteria in formed fæces are dead, it is preferable to work with a semi-solid or liquid stool. Liquid paraffin should be avoided, because the fæces containing it give messy preparations on microscopic slides, and the minute refractile oil globules are confusing when amœbæ or their cysts are being looked for. The best stool for the pathologist is the fresh liquid evacuation following a saline aperient. Recently passed mucus is the best material in which to find the entamœbæ of amœbic dysentery to be described later. Muco-pus obtained by direct vision of the lining of the bowel with a sigmoidoscope is a better material for examination, both for protozoa and pathogenic bacteria, than mucus passed with the fæces.

The fæces should be collected separately from the urine. The bladder should always be emptied before the stool is passed, in order that it may be free from urine. A chosen part of the motion should be submitted for examination, except where worms are suspected, when it is necessary to have a whole motion, so that the minute head of the tapeworm or ova may be searched for by concentration methods. In these cases the motion should be passed into a wide-mouthed jar or pickle-jar with screw-on top. A small amount of boiled water still warm may be put into the jar, which should then be securely fastened and properly labelled as mentioned below. In other cases a portion of the semi-solid stool and any pieces of mucus or muco-pus should be sent in a small sterile and tightly corked phial. Specimen bottles with metal or glass spoon for picking up suitable material are obtainable from the laboratories where the examinations are made. The label should contain the patient's name or an appropriate identification mark, the date, the time at which the motion was passed, a note of the examination required, and the doctor's name. No time should be lost in getting the specimen to the laboratory. If it is necessary to send it by post, a little sterile normal saline solution or 1 per cent. bicarbonate of soda may be added. The postal authorities require that it should be so packed that risk of breakage in transit is reduced to a minimum, and it must be labelled distinctly as pathological material. The packet, which should be marked "*fragile, with care*," should be sent by letter post, not by parcel post.

Cytology.

Small amounts of *mucus* in the fæces are common, and are not of pathological importance. A little mucus occurs on the surface of the motion in constipation, or mixed with diarrhœic stools, and is frequent in those of patients taking aperients. This mucus is uncoloured by bile and contains no cells; it is probably from the lower bowel. Larger quantities indicate irritation of the bowel, and masses forming strings or casts occur in *mucomembranous colitis*. At times these casts are several inches or more in length; the mucus is glassy-white or grey in colour, and contains some epithelial cells. Mucus from the large intestine is usually white or uncoloured; when it arises from the small bowel it is often bile-stained. *Sloughs* or mucus containing plaques of intestinal epithelium arise from necrosis in an ulcerated area and may be found characteristically in the stools of typhoid fever patients during the third and fourth weeks.

Muco-pus, leucocytes and pus cells mixed with mucus, may have been swallowed from the nasopharyngeal or bronchial tracts; when it arises from the bowel, it indicates an ulcerative condition of the colon, dysentery, chronic ulcerative colitis, or diverticulitis. The pus cells are usually degenerated.

Fresh pus in separate masses arises from the rectum or sigmoid, and may come from a fistula-in-ano, a proctitis of simple origin (e.g., from enemas) or a tuberculous, syphilitic, or gonorrhœal proctitis, or from an abscess which has burst into the lower bowel. In females the pus may have come from the vulva or vagina, and the possibility that a little bright blood or blood-stained mucus may become added to the motion during menstruation must be remembered.

Blood.—Bright blood-clot with intact blood corpuscles comes from rectum or anus, usually from hæmorrhoids; it is found streaking the surface of the motion or forms a little pool apart from it. Blood corpuscles mixed with mucus or muco-pus indicate an ulcerative lesion of the colon; the small motions produced with straining in dysentery and the summer diarrhœa of children may consist of little else than blood-stained muco-pus. In cancer of the colon the blood is often uniformly mixed with the mucus, forming a pink jelly, whilst in cases of ulcerative colitis the blood tends to lie on the surface of the mucus in little pools. When the blood comes from higher up in the bowel or has remained longer in it, it becomes changed, and may be recognised by

* Part II., on Bacteriology, will appear next week.

spectroscopic or chemical tests. The tarry stools following considerable hæmorrhage in the upper part of the alimentary tract are recognisable by the naked eye. The significance of blood in the fæces was dealt with in a previous article in this series (THE LANCET, 1928, ii., 1353), and the chemical changes of blood into acid hæmatin and hæmatoporphyrin were described. These substances are recognised with the spectroscope, and acid hæmatin in small quantities is also detectable chemically as "occult blood." The spectroscopic test is not delicate; the colour tests are very sensitive, but are given by other substances such as meat and green vegetables. With the chemical colour tests, therefore, a negative result is significant, with the spectroscope a positive is informative. With proper precautions, and when preceded for two or three days by a diet free from hæmoglobin and chlorophyll, a positive chemical test for occult blood shows that bleeding is taking place into the upper part of the alimentary tract. Search may reveal oozing gums, slight epistaxis, or blood-stained sputum, but usually the blood is coming from an ulcer, simple or malignant, in stomach or duodenum.

No clear inferences can be drawn from an attempt to differentiate the varieties of *epithelium* found in the stools. The casts of mucous colitis often contain some columnar epithelial cells and eosinophil leucocytes. In ulcerative colitis and dysentery degenerated columnar epithelium is found, also rounded or polygonal cells with a large, round easily seen nucleus from the deeper layers of the intestinal wall.

Parasites.

Tapeworms.—*Tænia solium* and *T. saginata* are the commonest forms, the latter occurring more frequently in these islands. The diagnosis is made by finding parts of the worm, often isolated segments, in the fæces, and the species of tapeworm is determined by the differences in structure. As the ova are not often passed free in the motions, a negative report does not exclude the presence of these worms. In the case of a third tapeworm, *Bothriocephalus*, not so common, however, the ova are abundant in the stools and a diagnosis is readily made. The procedure recommended is milk diet for a day or two, then an anthelmintic followed by a purgative. The motions should be passed into a vessel containing warm water, without straining if possible, the object being to secure the worm unbroken. The head, no bigger than a large pin's head, must be searched for carefully. If it is not found, a doubt remains as to the treatment having been effective, though the worm may have been killed and the head digested. But as the head, if left alive will grow again, treatment should be repeated in three months' time in case of doubt.

Roundworms.—Infection with *Ascaris lumbricoides* is often multiple. On finding a worm or ova in the fæces, treatment with santonin, oil of chenopodium, thymol, or calomel is carried out, and repeated later. In threadworms, *Oxyuris vermicularis*, the eggs in the rectal mucus already contain an embryo and auto-infection occurs. Anthelmintics should be used, combined with lavage of the bowel with hypertonic (20 per cent.) salt solution or 1 per cent. santonin. With these roundworms, as with *Trichuris trichiura* (*Trichocephalus dispar*), a common parasite, reinfection readily occurs through the fingers becoming contaminated by scratching and conveying the eggs to the mouth. Careful prophylaxis is necessary, by applying an antiseptic ointment (mercury or calomel) locally, and by suitable clothing to prevent contact of the fingers during restless sleep.

The *hookworm*, *Ankylostoma duodenale*, is a rare parasite in Great Britain. Its eggs are readily found and the infection calls for energetic treatment. Cases suspected of being ankylostomiasis must be notified to the Chief Inspector of Factories, Home Office, London, S.W.

Flatworms.—The ova of the liverfluke, *Distoma hepatica*, a rare infection occurring in sheep-breeding districts, and of bilharzial dysentery, *Schistosoma mansoni*, an introduced disease, may appear in the fæces. Treatment is indicated with preparations of tartar emetic by the mouth and intravenously, also in the latter disease, by bowel lavage.

Amœbæ.

Entamœba coli is a non-pathogenic inhabitant of the large intestine. In routine examination of fæces it has been found in up to 50 per cent. of patients in Europe, though in an ordinary civilian population in Great Britain it is much less common. During and immediately after the war it was more prevalent than nowadays. There may be mucus in the stools from irritation of the large bowel, but a report of muco-pus calls for further specimens of fresh stools in order that search may be made for the amœba of dysentery.

Entamœba histolytica, the amœba of dysentery, is a finding which must be taken up at once. The disease is notifiable, and calls for energetic treatment by amœbicides, emetine intravenously, tartar emetic and its derivatives, stovarsol or yatren by the mouth, or by intestinal lavage. Repeated examination may be necessary in some cases, but one positive finding by a pathologist experienced in this work is diagnostic. A report of dead or doubtful amœbæ should be followed up. The patient should take a saline aperient, and any mucus passed should be taken for examination at once, if necessary by special messenger, or preferably examined at the bedside. In a number of cases of subacute or chronic dysentery the diagnosis may thus be cleared up and appropriate treatment instituted. The amœbæ tend to occur in showers during exacerbations, and in the intervals cysts may be found in the more solid or partly formed stools. A report of *E. histolytica* cysts may be accepted in convalescents from dysentery and in the search for possible carriers, but it must be remembered that other amœbæ which are non-pathogenic have four-nucleated cysts resembling those of *E. histolytica*. The finding of such cysts is therefore not enough, and in doubtful cases it may be necessary to test their pathogenicity by infecting cats. Some of the figures showing a high incidence of dysenteric infection in England which were based upon finding these cysts, are therefore to be accepted with caution.

Infusoria.

Certain *flagellates* may be found in the stools. They are usually of no significance, but in some cases seem to set up irritation and to give rise to symptoms. *Trichomonas* may be found in patients who already have dysentery, and may sometimes itself set up a watery diarrhœa with colicky pains. Treatment by bowel lavage with ½ per cent. silver nitrate solution relieves. *Giardia* (*Lamblia*) *intestinale* may be pathogenic in some 10 per cent. of the cases in which it is present, giving rise to an enterocolitis, diarrhœa with mucous stools containing blood. Bismuth salicylate or salol, thymol, santonin, or stovarsol may be used by the mouth; and intestinal lavage with 1 per cent. methylene-blue or ½ per cent. silver nitrate solution.

A ciliate, *Balantidium coli*, more common since the war, is sometimes associated with symptoms of chronic dysentery. It can be controlled by intestinal lavage with ¼–½ per cent. solution of quinine; or by thymol or stovarsol by the mouth. Mention may be made of a vegetable parasite frequently reported, *Blastocystis hominis*, which is now regarded as of no pathological significance; stovarsol is said to cause it to disappear. Patients with these infusorial infections are often found to have subacidity of the gastric juice and to respond favourably when weak hydrochloric acid is given by the mouth.

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Special Articles.

INTERNATIONAL PHYSIOLOGICAL CONGRESS.

THE MEETING AT BOSTON.

THE thirteenth International Physiological Congress met at Boston, Mass., under the presidency of Prof. W. H. HOWELL, of Johns Hopkins University, on August 19th. The American Physiological Society, with the Federation of American Societies for Experimental Biology, entertained the foreign members and their friends, and showed a lavish hospitality. The large meeting was organised with such forethought that though over 1600 members were enrolled from 42 nations, its progress was smooth in every detail, and expressions of admiration and gratitude were heard from all sides. Over 500 members attended from the Old World, and the journey afforded opportunities of forming new and cementing old friendships. Most of the British members travelled by ss. *Minnekahda*, on which boat physiologists from twenty-two countries were represented. During the ten days occupied in the voyage many contests in sport between national and international teams formed a happy prelude to the more serious contests of the scientific sessions in the Harvard Medical School.

The Progress of Physiology.

The opening meeting was held on Monday evening, August 19th, in Sanders Theatre, Memorial Hall, Cambridge, where addresses of welcome were given by Surgeon-General Hugh S. Cumming, of the United States Public Health Service, on behalf of his Government; by Lieutenant-GovernorWilliam S. Youngman, on behalf of the Commonwealth of Massachusetts; by President A. Lawrence Lowell on behalf of Harvard University; and by the President of the Congress. These were followed by an address entitled "The Progress of Physiology," by Prof. August Krogh, Director of the Zoophysiological Laboratory at the University of Copenhagen. After directing attention to the rapidity with which the science of physiology was expanding, an expanse which was largely due to an increasingly close contact with the allied and fundamental sciences, Prof. Krogh pointed out that the unwieldiness produced by this growth made it impossible for any single human being to be familiar with modern physiology in all its branches, in the sense in which the great teachers of twenty or more years ago were familiar with the physiology of their time. The splitting up of physiology into more or less separate and independent sciences was inevitable, and we were confronted with the problem of finding the right lines of cleavage. Physiology as a science had taken its origin from the necessities of practical medicine, but most of the work done in physiological laboratories had no direct relation to medicine. The line of development which Prof. Krogh advocated was the establishment in one direction of a branch of physiology more intimately in contact with practical medicine, and in the other direction a branch which was much more independent. The time had come when special chairs and laboratories should be established for the physiology of disease, morbid physiology, or experimental medicine, if that name be preferred. The leaders of such laboratories should have no regular duties connected with the treatment of patients, but they must have at their disposal a small number of beds for the temporary study of selected cases, and facilities for studying disease experimentally on animals. The other line of development advocated was the creation in the science schools and in close coöperation with the departments of zoology, of chairs and laboratories for comparative physiology, animal physiology, or zoophysiology. Prof. Krogh's criticism of much of the work done to-day was that too many experiments and observations were being made and published, and too little thought was bestowed upon them. Facts were, of course, necessary, but unless fertilised by ideas, correlated with other facts, and illuminated by thought, they were to be considered only as material for science.

Scientific communications and demonstrations were given on August 20th to 23rd, six sections running concurrently in the auditoria of the Harvard Medical School, the High School of Commerce, and the Peter Bent Brigham Hospital. The communications numbered over 450 and the demonstrations nearly 80. We may refer briefly to those which have a more immediate bearing on the problems of medicine.

New Work on the Alimentary Tract.

L. R. Dragstedt and J. C. Ellis showed that the severe alkalosis following œsophago-duodenal anastomosis with gastrostomy in dogs was unaccompanied by any signs of tetany. W. N. Boldyreff, working with fistulæ in dogs, observed a rapid fall in the red cell count following the absorption of acid from the gut. Repeated introductions of 0·5 per cent. HCl, or 1·25 per cent. lactic acid into the stomach caused in two to three weeks a drop in the erythrocytes of more than 1,000,000 per c.mm., with the appearance of pathological forms. Cessations of such introductions was accompanied by a return to a normal count in a few weeks' time. Excess of acid in the digestive tract was thus shown to be responsible for the advent of anæmia resembling an anæmia of the pernicious type. The results of interesting and important work on fat absorption were communicated by F. Verzár. It was shown that the reaction of the contents of the small intestine is such that the higher fatty acids cannot exist there in the form of soaps. The bile acids, however, combine in watery emulsion with the fatty acids, and the resulting combination dissolves clearly in water even at pH 6·5 and diffuses readily through parchment membrane. The combination is a molecular one, and an explanation is thus afforded of the absorption of the higher fatty acids under the physiological conditions obtaining in the small intestine.

The Kidney.

E. K. Marshall reported that fish such as the toad-fish and goose-fish, whose kidneys were aglomerular, secreted urine of essentially the same composition as those provided with glomerular kidneys. The aglomerular kidney differs from the glomerular one in showing a specificity (similar to that exhibited by the salivary gland) in the elimination of substances not normally present in the urine. Thus phenol red is readily excreted in concentrated form by the aglomerular kidney, while sodium carminate and glucose are not excreted. All of these substances are eliminated by the glomerular kidney. The excretory function of the tubule would appear to be of a kind similar to that exhibited by secretory glands such as the liver, pancreas, and salivary glands. Studies in the composition of glomerular urine have been extended by A. N. Richards and his colleagues, who have now shown by means of quantitative analysis that the composition of this fluid approaches so nearly to that of an ultrafiltrate of the blood plasma as to leave very little doubt that the glomerulus is the seat of a process of filtration.

Dry heat as an effective means of increasing the elimination of urea and of chloride by the skin is recommended by F. N. Allen. This form of treatment can be used in suitable nephritic cases to produce four litres or more of perspiration daily, over long periods, and without prostration. Large reductions in the blood-urea may be brought about by this means—e.g., from 180 to 60 mg. per 100 c.cm.

Cardiovascular System.

C. Heymanns reported the results of experiments which were in close accord with the fundamental work of H. E. Hering, on the rôle of the sinus caroticus in the control of the general arterial pressure. By perfusion of the innervated sinus of one dog by means

of another, Heymanns was able to show that the bifurcation of the common carotid artery was the seat of receptors sensitive to changes in blood pressure, and the site of origin of impulses engaged in the reflex control of cardiac rate, of the arterial blood pressure, and of the secretion of adrenalin. All the cardiac, vasomotor, and adrenalin-secretory phenomena which had generally been attributed to a direct action of changes in blood pressure on the medullary centres were shown to be of a reflex nature.

W. Raab provided evidence that a hyperexcitability of the vasomotor centre to the CO_2 tension in the blood was to be regarded as a pathogenic factor in essential hypertension. The CO_2 tension in such cases was not greater than normal, but slow deep breathing was followed by a fall in the tension of this gas and in the blood pressure. Breathing a mixture consisting of 3 per cent. carbon dioxide and 97 per cent. oxygen produced a fall in neither, from which it was concluded that the fall in blood pressure encountered before was due to the accompanying fall in the CO_2 tension in the blood. The effect is absent in hypertension associated with nephritis.

Pharmacology.

C. H. W. Lucas and V. E. Henderson reported the results of a study of the anæsthetic properties of cyclopropane. This gas produced rapid anæsthesia in cats in a concentration of 11 per cent. in oxygen. No depression of the medullary centres was observed, but a fall in blood pressure occurred when the concentration of the gas was raised to 25–30 per cent. Animals were anæsthetised on three successive days, for periods of two hours without any toxic effects being manifested.

Sodium amytal has been used by L. G. Zerfas, H. A. Shonle, E. E. Swanson, and G. H. A. Clowes as an intravenous anæsthetic in man. Like other barbituric acid derivatives, this salt undergoes hydrolysis, and ultimately decarboxylation when held in solution. It should be highly purified and its solution (10 per cent. in distilled water) accurately adjusted to an appropriate pH value, if used for producing anæsthesia in man. There is frequently a somewhat prolonged period of post-anæsthetic sleep, which in dogs could be successfully counteracted by the intramuscular injection of ephedrine and caffeine. The highly purified and accurately adjusted preparation has been used successfully for human anæsthesia in upwards of 1000 cases.

A. E. Koehler, L. Eichelberger, and A. B. Hastings reported that they had succeeded in separating from the suprarenal gland an epinephrine-free substance which was capable of elevating the basal metabolic rate and producing improvement in various clinical types of asthenia. These effects were obtained by oral administration of the extract.

Carbohydrate Metabolism.

A number of communications were read on the subject of insulin, but few had any present application to medicine. It is interesting that intrafœtal injection of commercial insulin in the goat caused a lowering of the maternal blood-sugar. In the depancreatised dog, absorption of insulin from the intestine was very materially increased by the presence of various liver products such as bile, or salt solution suspension of liver pulp.

The question of glycogen storage and combustion of carbohydrate in the absence of insulin has received attention, with some novel results. In the eviscerated rat (according to the work of the Cori's), injection of glucose causes no rise in the respiratory quotient (corr. value 0·71 throughout), and presumably no extra combustion of carbohydrate, but leads to a definite increase in the muscle glycogen. In the depancreatised dog (complete removal verified post mortem) survival without insulin has occurred for as long as three weeks. After the first few days the diabetic symptoms abate, the respiratory quotient creeps back to 0·9, the D : N ratio drops below 1, and the acetone bodies diminish markedly. If insulin is now given and then stopped the usual severe diabetic symptoms return once more. This work was reported by Soskin and Campbell, working at the Toronto laboratories.

Muscle.

The physiology of muscular exercise was the subject of nearly 30 communications. Two workers reported successful preparations of isolated involuntary muscle which behave regularly. Bozler, using the retractor pharynx of the snail, *Helix pomati*, has studied the relations of heat production and tension and found this plain muscle to differ only in the time relations of these quantities from the skeletal (voluntary) muscles of the frog. McSwiney and Robson have prepared sections of mammalian stomach muscle with vagus and sympathetic innervation, and studied the effects of stimulation of these nerves under various conditions.

Shaffer and Grünbaum have measured the excretion of lactate as a result of exercise (rowing, football, &c.), both in the urine and in the sweat, and record that in certain circumstances, notably in warm weather, the excretion is mainly through the skin. With the aid of cinematography, Fenn has analysed the movements of running men, and calculated their efficiency. 22½ per cent. of the chemical energy liberated was developed as mechanical energy. The relative values of wind-resistance, gravity, and the checking of limb movements, as sources of energy loss, could be estimated.

A neat technical advance was that of Sosnowski, who has constructed a tension recording-lever for small muscles, based on the piezo-electric properties of quartz crystals. It is claimed that tensions developed in truly isometric twitches can be measured.

The Final Days.

The closing address of the Congress was given by Prof. Léon Fredericq, President of the Second International Congress which met at Liege in 1892, his subject being "Souvenirs des premiers Congrès de Physiologie." An invitation to hold the next meeting of the Congress in Italy was accepted with acclamation.

The foreign members of the Congress were conducted to Woods Hole, where they were entertained at the Marine Biological Station, which is situated in beautiful surroundings. The party then visited New York, where they were the guests of Columbia University for a week, during which time many excursions to medical centres, research institutes, and other places of interest were made.

From New York 200 of the visitors went up the Hudson River to Albany, where they were met and conveyed by motor coach to the laboratories of the New York State Department of Health. They were made welcome by the staff, entertained to an informal supper, and taken in small parties over the laboratories. Within four hours they were travelling on to Canada, but those four hours were a memorable example of quietly efficient and kindly American hospitality. At the Niagara Falls the party halted for a day to view the Falls and the famous rapids. Prof. Best escorted the party down the Niagara River and across Lake Ontario to Toronto, where the University lent its dormitories for the accommodation of members for two days. Though one of these days was a national public holiday, the laboratories were kept open, and the delegates were able to see the work in progress. Prof. Henderson and his energetic committee entertained the party to lunch, the Prime Minister of Ontario and his Cabinet to dinner. Continuing their journey across the Lake and down the St. Lawrence River, the delegates reached Montreal, where they were received by a joint committee of the universities of Montreal and McGill. The Biological and Medical buildings of McGill were open to inspection by the delegates, as also was the Royal Victoria Hospital, and they were entertained by the city of Montreal and the province of Quebec.

The party left on the evening of Sept. 6th by the ss. *Doric*.

Opening of the Medical Schools.

SEVEN of the London medical schools inaugurated the winter session during the past week with a formal ceremony. We print below in abridged form the opening addresses delivered to the medical students of Guy's, St. George's, Middlesex, Royal Free, and Westminster Hospitals. The prize-giving at Charing Cross Hospital takes place this (Friday) afternoon.

GUY'S HOSPITAL.

SIR HUMPHRY ROLLESTON, BART., G.C.V.O., K.C.B.,
REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE.

MEDICAL SOCIETIES: THEIR ORIGIN AND VALUE.

[Sir Humphry spoke of the traditions of the Medical School of Guy's Hospital, and of the fine men and great books which had emanated from this school. Great as were its traditions, he said, Guy's did not live on its inheritance, for its *Reports*, so unobtrusively inspired by Dr. A. F. Hurst, the senior physician, were not only the oldest in London but, like vintage wines, progressively improve. In yet another direction the school of Guy's Hospital has played a pioneer part—namely, in the growth of medical societies, and thus furthering medical education and progress, general understanding, and unity. He then noted the connecting links between the Physical Society of Guy's Hospital, which flourished from 1771 to 1852, and the Medical Society of London, which was its junior by two years. The success of the Physical Society, though followed by flattering imitation, had carried with it a penalty, for the competition of younger societies killed it. Its declining years were cheered by watching the activities of its offspring—the Pupils' Physical Society, which dated from 1830, and had always been confined to students of Guy's Hospital, members of the staff being eligible as honorary members only. He continued:]

Medical Clubs.

The evolution of a full-blown medical society can easily be traced; the embryonic stage is found in medical friendships and the gregarious nature of the human man—an attractive feature more frequent and effective in early than in later life. In due course the initiative of some energetic spirit creates a medical coterie or club, and meetings for the reading and discussion of papers follow. By expansion and systematic organisation a medical club may, like the transformation of a financial syndicate into a company, give birth to a society with a more catholic membership; for example, the informal "Moorfields Club," which met in the house surgeon's room for the discussion of ophthalmological cases and problems as far back as 1866, in 1880 took steps to establish the Ophthalmological Society. Sometimes, on the other hand, the club stage is short-lived or is practically short-circuited—for example, in the formation of the Association of Physicians of Great Britain and Ireland, in which William Osler, Richard Douglas Powell, William Hale-White, Wilmot Herringham, and others were the true begetters.

Medical clubs differ from medical societies mainly in their less formal and more private character, in the more personal element, especially in the election of members, their limited membership, and usually in not possessing a library, which is such an essential asset to a medical society. To some extent this serious want may be met by a subscription to a circulating library, and in some instances the book-club element forms the basis and covers all the educational activities of a medical combination. Medical clubs very rarely publish their proceedings, but the Charaka Club of medical bibliophiles, mainly resident in New York, has brought out a number of volumes containing the papers read at its meetings. A medical club is the organised outcome of a group of men working in unison; these clubs flourished long before the word team-work became popular in connexion with those engaged in original research, but the same fundamental principle that inspires the research workers is shared by clubs or small societies designed for mutual education. Medical clubs differ much in their objectives, the prominence of the scientific and social characters varying widely. Some starting with high educational intent have become more social and post-prandial, so that later the members are chosen rather for their clubbable attractions than because they are pale students. Such a lapse from the ideal of high thinking to high living is, it must be feared, more frequent in clubs made up of prosperous qualified men than in those whose members are *in statu pupillari*.

[Sir Humphry Rolleston then discussed the advantages of medical clubs in providing opportunity for the informal, private, and critical discussion of new work in a pre-publication phase, for visiting clinics at home and abroad, and in promoting friendly feeling among co-workers. A valuable and instructive, though often evaded, function of a medical club was the obligation on each member in turn to contribute a paper or demonstration; for this provided a training in the art of accurate argument and exact expression. If medical writers and speakers were compared, it was noticeable that the successful writers had more often been physicians, as the Guy's traditions proved; whereas real oratory, a rare accomplishment, seemed specially related to surgical eminence, as was so remarkably shown by the succession of William Lawrence, James Paget, William Savory, and Henry Butlin at St. Bartholomew's Hospital, and by other Presidents of the Royal College of Surgeons of England. A further debt to the early medical societies was that their publications preceded and led to the evolution of medical journals. He proceeded:]

Medical Societies.

By those who do not attend medical societies, and may perhaps regard this devotion as a youthful indiscretion, the reason confessed for their abstinence is sometimes not indolence, but a delicate disdain for self-advertisement. Modesty is indeed an admirable virtue, particularly in our rivals; but the English are somewhat prone to an excess of this fine trait, and men too diffident or hypercritical of their own work, or too much impressed by the verse expressing a desire that "mine adversary had written a book," may delay publication of their observations indefinitely so that they remain mute and inglorious, and thus may perhaps delay the progress of knowledge. The wisely modest man remains a student all his life, and recognises a medical society as a means of easily obtaining post-graduate instruction. With the passing years the habit of attending meetings wanes, and eventually is given up altogether, ostensibly on account of the increasing calls and fatigues of professional life; as a result the individual necessarily loses touch with what is going on, though with the unconscious failure of mental elasticity he may remain blissfully self-sufficient. He may excuse himself by saying that he can read it just as well and more quickly; but, even if he remembers to do so, the effect of the written word is not always the same as that of the spoken address. Further, and this is not very rare, laziness when disguised, like a wolf in sheep's clothing, under the cloak of modesty, may exert an unwholesome influence; a cynical attitude to societies in a senior tends to counteract the benefits that may be obtained from the give and take of debate; it may discourage others from speaking and sharing in the stimulating contest of wits which by a flash may create new ideas and strike out hypotheses worthy at least of being tested. At first public speaking is a nervous experience, and with many, even the best-known speakers, this is always the case; as Mr. T. P. O'Connor, the father of the House of Commons, and so an authority, has said. As the restless anxiety is felt before rather than during delivery, the intending speaker may easily

be inhibited by the unkind, perhaps whispered, suggestion during a meeting that the speakers are bores; but he should estimate the significance of the snub by consideration of his critic, for it may be a case of:

> "So have I heard on Afric's burning shore
> Another lion give a grievous roar,
> And the first lion thought the last a bore."

That those prominent and keen at societies possess the faculties which make for professional eminence and success is well shown by the records of the Royal Medical Society, run by the students at Edinburgh, the Presidents of which so often reach the seats of the mighty both in the Northern Athens and in the capital of what the Scots have modestly called the southern peninsula of their country; Richard Bright, for example, was President of the Royal Medical Society before he left Edinburgh in 1813 for Cambridge, where he spent two terms before returning to Guy's. Another instance of early activity at societies as an omen of future success was seen in London about fifty years ago, when no medical meeting was said to be missed by "the three G's"—Sir James Goodhart, Sir William Gowers, and Prof. W. S. Greenfield, of Edinburgh, who reached the highest places in general medicine, neurology, and pathology respectively.

In addition to the educational advantages of merely listening to papers and following the discussion, there is the inestimable benefit, already mentioned, that writing a paper confers on the author, for it should entail a thorough review of the subject and the critical marshalling of data, ideas, and the results of his own experience. Without some stimulus of this kind, such as lecturing in a medical school or writing a book, the habit of *not* reading systematically easily gains the dominion over us, and we, though at first imperceptibly to ourselves, thus begin to drop behind in acquaintance with progressive medicine.

ST. GEORGE'S HOSPITAL.

EDMUND I. SPRIGGS, M.D., F.R.C.P.,
SENIOR PHYSICIAN, RUTHIN CASTLE.

DOCTOR AND PATIENT: FOUNDED ON 33 YEARS OF MISTAKES.

IT is perhaps not unfitting to-day to scan and set forth the relation between patient and doctor in the same way as we describe a disease in its various aspects; beginning with the history and passing on by way of ætiology, method, and complications to the prognosis and treatment.

The written history of the relation between doctor and patient shows that you are the recruits of a great army of men who have served this art, and inherit the fruit of their labours. You are more fortunate than they in many respects, of which I shall mention two. The first is that of intellectual freedom. The second respect is that as compared with even recent days, the means of controlling and arresting disease are fuller than ever before and growing daily.

Ætiology and Pathology.

As regards the *ætiology* of the relation between doctor and patient, it is, of course, the sick person who sends for the doctor. The method of selection is various. If you are chosen because you are known to be competent, live reasonably near, or have succeeded the former doctor, well and good. If you do your part there is a fair chance that the relationship will last. But if you are chosen because your patient's dinner or dancing partner told her that you were absolutely the only man for the nerves, or the gapes, or whatever it is—beware. It is a positive danger to have emotional persons going about saying Dr. So-and-so is wonderful. As soon as many people say the same it becomes the dernier cri, and this lives only a little longer than a May-fly. De la Fourchardière, in an amusing cynical book entitled "Les Médecins malgré nous," points out that once the relation is made the patient wants the doctor if there is nothing the matter to find something; if there is something the matter, he wants him to find nothing.

A *pathology* may arise in the relationship between patient and doctor on the part of either. As regards the patient, nearly every one will be a single-minded person seeking relief, ready to give you all possible help in your work, bearing illness bravely, and commanding your admiration and regard. But you will learn to recognise a few folk who are less anxious to keep to the truth than to produce a certain impression; you will also become familiar with the sublime unconscious selfishness of the neurotic; and with the imitation great who show their importance by giving trouble. The relationship is also out of order if the patient expects a sound opinion without adequate information, examination, and reflection; or to be treated without interference with harmful habits. In these days the prevalence of new ways of observing has led some patients, and some doctors, alas! to a new error—namely, that of undervaluing careful clinical method, upon which our work must always be founded, and of thinking that some test will of itself make the diagnosis. You will bend to none of these errors, but will advise what you know to be right. The difference between you and the charlatan is that you are there to do the patient good by any method, whereas the charlatan is out to sell his wares, whatever they may be. The charlatan is judged by his successes, and we by our failures. And, of course, he has plenty of successes. He benefits, like all who follow the healing art, whether qualified or not, by the simple arithmetic of illness. If everyone needs a doctor on the average ten times in his life he only dies once—that is, in nine out of ten illnesses the patients are likely to get better, provided that they are fair samples of the population. Should you become a consultant and draw your patients from your fellow-doctors, the proportion of your successes, on an arithmetical basis, will be still less, because all the easy ones will have got well, and only those who need further help will be sent.

The *method of work* is of lasting importance, and that you will be taught here. You will soon recognise that in illness there are commonly two elements—namely, the disease, and the patient's natural anxiety about it. The second element can often be put aside by a quiet assured manner on your part.

When *taking a history* you will find that patients will speak with conviction about what cannot be established—e.g., "I make such a lot of bile," or "I do not assimilate my food," "I suffer from the liver," confusing an unstated fact with an overstated interpretation. You will form the habit of keeping the symptoms and signs well separate in your mind from any interpretation or diagnosis; and will try to avoid statements about what we do not know, remembering all the time how much there is, present and active, in any case, which is hidden.

If the case is a new one, you will find it a great help to get into touch with *other doctors* who have seen and treated the patient. Doctors are colleagues, not merely rivals, and the solidarity of our profession is not only right for us, but especially good for our patients. The public does not always realise this, putting much faith in a series of so-called independent opinions, which are sometimes just unconnected guesses. From some experience of obscure and difficult problems I say that special opinions are of much more value when those giving them communicate with each other, and have knowledge which, in many cases, only the family doctor can supply.

The family doctor is the unit of all medical work. His standard has risen enormously during the last generation, and will continue to rise. He should control the case, using specialists and institutions as need arises. His is the responsibility, and this is right, for he has to live with or near his patient for their common lives. Patients who do not keep to their doctor run a considerable risk, because no one else can hold all the threads.

I believe we fail more often in simple apprehension than in the two further parts of logic. The faculty of judgment—i.e., "of arranging the individual things we meet in general notions or classes . . ." and the faculty of reasoning founded upon it are, I suggest, less often at fault; in any case neither judgment nor reasoning will avail unless founded upon a right apprehension of the available facts. If you learn how to examine properly the avoidance of certain mistakes becomes unconscious. It is like style in cricket, tennis, or golf, which requires attention to little points, details which seem irrelevant when the main object is to hit the ball hard and straight. But attention to them ends by making your play, not perfect ever, but a more skilful and better game, and a game which you enjoy more yourself. Affectations correspond to useless waggles of the bat or club. And you will avoid like poison the mental attitude of the man who holds his club up in the air after a successful shot, as if to say, "See what I have done."

Diagnosis, Prognosis, and Treatment.

The public at large has only lately begun to grasp the importance of giving time and thought to diagnosis. The attitude hitherto has been that the doctor should at the least name the disease, after a short interview, and if he does not know what the matter is, the rignt course is to try another doctor and get the treatment decided upon and started as soon as possible. The fruits of this attitude are sometimes astounding. For instance, if it is recommended that a young person should go abroad for six months or take a voyage round the world for health, the whole family will foregather, and if necessary subscribe to carry out what is advised. But to spend a month, or some money, in finding out what the matter is, how bad it is, and what measures do most good, strikes many people as savouring of incompetence on our part. I could recount instance after instance of people who have spent years in trying different treatments, particularly abroad, whose cases could have been cleared up by simple investigations. But this phase is abating and you will perhaps before long be faced with a converse one which I begin to meet—namely, that presented by the people who are all for diagnosis but have no time or patience to try to get well.

I have mentioned that doctors may walk into the pitfall of making a diagnosis on a particular finding either at the bedside or in the laboratory. It is necessary, particularly with unexpected findings—a lump, a large heart, fluid in the chest, a gall-stone—which puts the idea of one particular disorder in your mind, to stop and ask yourself: Is this the cause of the ill-health? Can it be anything else?—going over each symptom. When you have given time to a knotty case, and have made a diagnosis, do not be too quick to alter it. I have several times been wrong in taking a diagnosis back.

The *complications* that may arise in the relation between doctor and patient are infinite. Among the most common on the part of the doctor is anxiety; it is essential not to allow anxiety to bias judgment. If there is one place more than another where a fidgety mind is not wanted it is in the sick-room. The doctor who worries too much takes away from his own usefulness; though I suspect that he that does not worry at all is no doctor.

Doubt and anxiety will be lessened if you are able so to arrange your work that you can deal with a problem at the time. Having your facts, go into the matter fully. Keep good reference books, and read up the case without delay. To-morrow fresh puzzles will come and drive the finer points of this one out of your mind. In some cases books do not help much, for diseases are not so obliging as to confine themselves to type; and each of you will meet one day a new disease, and many times new combinations of diseases. You must then settle down and think. And such thinking will be the more fruitful the more you have heeded your anatomy and physiology, and your training in the post-mortem room and at the bedside.

On the part of the patient the worst complication is mistrust. This is only natural in the first instance, and must not be resented. By the time that you have done all in your power to help your patient it will nearly always have vanished. If not, you are justified in suggesting to him in the most friendly way that what he really wants is a doctor he can believe in. Faith is, of course, a help. De la Fourchardière, our cynic, says that is why the clergy go to Vichy and the doctors to Lourdes. Some patients fear that the doctor is trying to keep them under treatment for longer than they think necessary. There are many more whose faith wavers, not unnaturally, when they are advised to follow a prolonged tedious course involving self-denial. It is expedient to keep in mind that outside causes influence progress, for good as well as for evil. It is common to find a patient not so well and full of complaints, and learn afterwards of some personal disturbance unconnected with the disease or its treatment, such as worrying letters or the non-arrival of expected news. You will often be asked to give counsel on matters which are not strictly medical at all. If your advice may concern others, when possible see the others. Your patient's interests come first, but it is in those interests that you should not be merely an advocate of his or her views, but should guide rightly.

The *prognosis* of the relations between doctor and patient is almost uniformly good, but if an exact relation between success and gratitude is expected there will be disappointment. I remember one patient in whose case we were doubly fortunate in that a serious disease was found and means of complete relief applied successfully. He bade me farewell as follows: "Doctor, I can never thank you enough. When I came here I was done and I knew it. Now I am well again." His eyes filled with tears, he shook me by the hand, and, looking to the open windows, added, "I believe its the air." If you have learned to laugh at yourself, you will have a good deal of fun. On balance, the rewards are more than the deserts.

The *treatment* of the relation between ourselves and the sick person is clear enough if we ask ourselves two questions: (1) How should I like to be dealt with if I had this patient's disease and his mental make-up? (2) How would it do me most good to be dealt with? The ideal blend of sympathy and firmness, we can envisage, but alas! seldom attain.

It is, on paper, hard to define how much a sufferer should know about his illness. It is generally better to tell an intelligent person the truth, in as simple language as possible, avoiding technical terms and all detail which may be brooded upon later and misinterpreted. It is more skilful to put the facts so that they are not alarming than to withhold them. If a man is the subject of a serious chronic disease he often knows, at the least, that he cannot be the same again, and will be satisfied if you dwell upon how to relieve rather than upon the unlikelihood of cure. The case of cancer is sui generis, but in effect difficulty seldom arises. Above all, in your desire to answer questions frankly never go beyond what is certain. To destroy hope in the mind of any patient is inexcusable. It is also unwise, because you do not always know. We are not there to pass sentence. Remember "Guérir quelquefois, soulager souvent, consoler toujours."

Conclusion.

In all these matters you will have the advantage of learning your profession in a country in which the standard and the conduct of practice is higher than in any other; in a city the streets of which were trodden by Harvey and Sydenham, Hunter, Jenner and Young, and Lister; and at a hospital which has had more than its share of these pioneers of medicine. The physicians and surgeons at St. George's have had the reputation of being not only technicians; they have played a part in other spheres—science, literature, art, and sport. And that is one reason why they have trained so many good doctors. A doctor

may suffer a little in his personality if he does nothing but work. And to keep on a level keel, you will, if you are wise, carry on our hospital tradition. Do not have all your friends doctors. Be a man among men away from the sick-room. In looking back to the devoted clinical teachers of my youth I sometimes wish that in their desire to pass on to us what was known they had left less of an impress of finality; but had rather opened our eyes to the great fields of the unknown that lay before us, and had stirred us to believe how easy it might prove to the patient observer to reveal new facts. I had the idea as a student that all the main discoveries in medicine had been made, and that new ones would come only from the exceptionally able, and that after laborious and abstruse research. It was not so, and it is not so now. A great Frenchman said nearly 300 years ago, "the sphere of our knowledge expands without ceasing, but as it increases so does the number of its points of contact with the unknown." I have only to look back upon the changes and the simplifyings that have come over medicine in my short span to know that there are those listening to these words to-day who will add to our knowledge and to the means by which we may modify and arrest disease.

MIDDLESEX HOSPITAL.

E. A. COCKAYNE, M.D., F.R.C.P.,

PHYSICIAN TO THE HOSPITAL.

LIFE'S ENDLESS CHAIN.

[Dr. Cockayne said that the subject of heredity was a branch of medicine almost completely ignored by many authors of text-books and by teachers in the medical schools. Its study afforded evidence of the close relationship of the sciences taught in the preliminary course to one another and to the theory and practice of medicine. He summarised the simple experiments made by the Abbé Gregor Mendel in 1865 which had completely altered our views on the subject of heredity, and explained the laws of inheritance of dominant and recessive characters in plants. Experimental methods of breeding had shown that the characters of animals behaved like those of plants. Dominants were transmitted direct from parent to offspring, and recessives in the presence of the corresponding dominant were handed down from generation to generation, causing no outward and visible sign of their existence in the transmitters, but appearing again unaltered whenever a mating between two impure dominants took place. Dr. Cockayne then discussed the applicability of the Mendelian law to man. He said:]

Heredity in Man.

In man no direct experiments are possible, and the small families and the slow sequence with which one generation follows another make it far more difficult to prove that in him, too, inheritance obeys the Mendelian law, but the greater the number of long and accurate pedigrees that are accumulated the more does its applicability to man become apparent. Most of these pedigrees, it is true, illustrate the inheritance of conditions more or less abnormal, those illustrating normal ones are seldom simple. For instance, the inheritance of the colour of the hair and eyes, and of pigmentation of the skin, in which segregation undoubtedly takes place, are complex cases in which more than one pair of factors are involved. One form of curly hair, however, is a good example of the complete dominance of one normal character, hair spirally coiled and oval in cross-section, over another character, hair straight and circular in cross-section, and the pedigree shows that in the marriages between a curly-haired and a straight-haired individual half the children had curly and half straight hair.

If we turn from the physiological to the border-line between the physiological and the pathological we find that the same law of inheritance prevails. In man two types of piebald are met with, and in both of them the distribution of pigmented and unpigmented areas has its exact counterpart in a breed of domesticated animal, and in both man and animals the two types of kinds of piebald pattern are dominant to the normal pigmentation. Albinism, due to partial or complete inability to form the pigment melanin in the skin, hair, eyes, and internal organs, is definitely pathological. Owing to its conspicuous appearance and its widespread though rare occurrence in many species of animals, mammals, birds, and even reptiles, it has always excited public interest. There is more than one kind of albinism, but whatever its kind and in whatever animal or race of man its mode of inheritance has been studied, it has proved to be recessive to normal pigmentation. Though rare in most races of man, amongst an isolated tribe of Indians in the Daren Peninsula of South America albinoes are numerous. The tribe does not permit the marriage of two albinoes, and its common occurrence is due to the isolation of the community and the consequent frequency of intermarriage between blood relations, who are impure dominants. In these Indians albinism is always associated with small stature and increased hairiness of the skin, and in Europeans with visual defects. I mention this because what we call a unit character is often merely the most easily recognised, but not necessarily the most important of many departures from the normal, all of which are dependent on a single factor.

Another chemical error inherited as a recessive is porphyrinuria, in which porphyrin, a red pigment easily identified by chemical tests and by spectroscopy, is excreted in the urine. Here we trespass on the domain of physics, for the chief disability of those unfortunate people, who cannot break down hæmoglobin, the red colouring matter of the blood, beyond this stage is that the porphyrin accumulates in the skin and renders it sensitive to sunlight, which blisters and destroys it. Xeroderma pigmentosum is another recessive defect, in which the skin is so affected by sunlight that cancer of the exposed skin develops at an early age, and though the nature of the defect is still unknown, its resemblance to porphyrinuria makes one suspect that it too is an inborn chemical error. If so it may prove to be the best clue to the cause of cancer. As an example of defective structure I will cite polydactylism, which is dominant in most families, and it is interesting to note that in some of the domestic animals polydactylism occurs and is inherited in the same way.

Anomalies of the ductless glands, so fascinating because of their far-reaching effects on growth and metabolism, are in some cases hereditary. Diabetes mellitus, due to a deficient secretion of insulin by the pancreas, has many different causes, but in some families a weakness of the gland is inherited and transmitted as a recessive character. Man is not the only sufferer, for in mice a strain has been met with in which the same disease is transmitted and, as in man, it is a recessive. Gigantism and acromegaly, with its strange overgrowth of the extremities, are due to over-secretion of the anterior lobe of the pituitary gland and are inherited as recessives, while the excessive and perhaps abnormal secretion of the thyroid gland, that causes exophthalmic goitre, is inherited as a dominant in some families.

One might multiply examples of inherited physiological attributes or chemical and physical defects indefinitely, but enough has been said to show in what diverse conditions Mendelian segregation of unit characters can occur.

The Chromosomes as Carriers of Mendelian Factors.

The microscope has enabled us to supplement the work of the experimental breeder by revealing to us the physical explanation of the manner in which this segregation is brought about. The student of histology sees in every artificially stained cell a deeply coloured central part, the nucleus, and in a series of sections showing the various stages of cell division he sees the nuclear material form a ribbon and then split up

into a number of small pieces, the chromosomes, a number varying in different species of animals and plants, but with certain remarkable exceptions constant in any given species. In the process of formation of the germ cells, both male and female, a reduction in the number of the chromosomes takes place. Half are lost, so that a germ cell only contains half as many as any of the cells of the rest of the body. It is only by the union of a male with a female germ cell that the full complement can be reached once more. Nor is the union haphazard; each chromosome unites with its corresponding chromosome and each part of a chromosome with the corresponding part of its fellow. Long before the discovery of Mendel's paper it was believed that the nuclear material of the cell was the part which carried the qualities of one generation to the next, and recent work has consistently added strength to this conviction. If we regard the chromosomes as the carriers of the Mendelian factors that determine inherited characters, we can understand how the halving of the number of chromosomes in the germ cells is adapted to ensure that each germ cell shall contain one of every pair of corresponding factors, and we can also understand how the manner in which the full number is restored in the fertilised ovum ensures that one of every pair of such factors is derived from each parent.

If the cells of the body contain in a pair of corresponding chromosomes both members of a pair of factors, say A and B, the germ cells of that individual will be of two kinds, one kind having one member of the pair, A, and the other kind the other member, B. If this individual marries another of like constitution the expected combinations of their germ cells are A with A, B with A, A with B, and B with B, and each combination should occur with equal frequency, so that if A is the factor for a character dominant to B the proportions among the offspring will be one pure dominant, A A, two impure dominants, A B, and one pure recessive, B B. Thus the behaviour of the chromosomes is adapted to bring about the results that are actually found in experimental breeding.

So far we have dealt only with characters that are met with equally in both sexes, and the explanation given will not cover the inheritance of those met with in one sex alone. In some beetles there is a chromosome fewer in one sex than in the other. In other animals, though the number of chromosomes in the two sexes is the same, one of a corresponding pair is smaller or, as in flies, differently shaped in the cells of the one sex. Conventionally we speak of this pair of dissimilar chromosomes, which appear to be the determiners of sex, as the X and Y chromosomes, and it is found that in man the male has an X and a Y, and the female two X chromosomes in the cells of the body. Thus when the germ cells are formed all those of the female will be alike, each having an X chromosome, but those of the male will be of two kinds, one having an X chromosome like those of the female, and the other a Y chromosome. Union between a germ cell of the female and a male germ cell of the former kind containing an X chromosome will give rise to a female child, whereas union with one of the latter kind containing a Y chromosome will give rise to a male child. The X chromosome may carry factors for normal or pathological characters just like any of the ordinary chromosomes, but the Y chromosome, which as I have said may be absent altogether, seldom if ever carries any factors at all.

Female Transmitters of Abnormalities Affecting Males.

This fact gives the key to those strange cases of inheritance in which the male alone shows the abnormality, but has apparently healthy children, while the females, though not themselves affected, transmit it to half their male offspring. This mode of inheritance, spoken of as sex-linked, can be explained by the factor concerned lying in the X chromosome and being recessive. If an affected man marries a normal wife all his sons will be normal, because they only receive the unimportant Y chromosome from their father, but all his daughters will be capable of transmitting the condition, because the X chromosome received from the father carries the recessive factor, though the second X chromosome received from the mother carries the corresponding dominant and so makes them appear outwardly normal. Half the germ cells of one of these transmitting females must have an X chromosome carrying the dominant factor for the normal and the other half an X chromosome carrying the recessive factor for the abnormality, so that, if she marries a normal male, there will be an equal chance of either kind of germ cell uniting with a male germ cell having a Y chromosome. Thus half the male children will be normal and half will inherit the abnormality. Half the female children will be normal, and the other half will appear so, but will be transmitters of the abnormality.

In addition to normal characters, of which we know little, a number of interesting and important human abnormalities may be inherited in this way, such as colour blindness, hæmophilia, optic atrophy, muscular dystrophy, and deficiency of hair and teeth with absence of sweat glands, though in other families the same or similar abnormalities may be dominants carried by one of the ordinary chromosomes and so affect both sexes alike. This dissimilarity of the sex chromosomes also provides us with a scientific explanation of the popular belief that sons take after their mothers. A son receives from his mother an X chromosome bearing the factors for many characters, and all of these will affect his mental and physical traits, whether dominant or recessive, because the Y chromosome received from his father bears no corresponding member of the pairs.

I have only mentioned the simple case of a pair of corresponding characters, but there are many more complex examples. Even now we can foretell of many human characters whether they are likely to be transmitted to the offspring, and, if so, in what proportion they may be expected. If dominant they are likely to appear in the next generation and in half the children, since pure dominants are almost unknown in man, but if recessive it is most improbable that they will appear in the next generation, though they will reappear in a subsequent generation near or remote. We can give a warning that, when a recessive character has appeared in a family, marriages between blood relations and especially between first cousins are likely to result in its immediate reappearance, because many impure dominants are present in such a family and marriage between two of these will lead to its appearance in a quarter of the children. The adolescent insanity, dementia præcox, is an example, and the frequent intermarriages of Parsis in Bombay is the cause of its high incidence among the members of this gifted community. Amaurotic family idiocy is another example, and in this fatal disease, which is almost confined to Jews, blood relationship between the parents can be traced in the majority of cases. Two similarly afflicted people seldom marry. Deaf-mutes are the commonest exception, and since one form of deaf-mutism is inherited as a recessive some of these marriages give rise to the expected result, a family of children all of whom are deaf-mutes.

Great as the advances have been in our knowledge of the inheritance in man of characters, desirable and undesirable, during the last two decades, an almost unlimited field awaits our further progress. There may be a number of diseases which originate from an obscure but innate defect, as pernicious anæmia appears to originate from an inherited achylia gastrica. Unsuspected metabolic disorders must exist, which when discovered will shed new light on the normal chemistry of the body.

Conclusion.

The science of eugenics is in its infancy. The application of Mendelian principles to agriculture and stock raising has had far-reaching results. For instance, the output of sugar per acre in Java and of wheat in the temperate zone has been greatly increased,

and the use of a sex-linked character has become the basis of a large trade in "one-day chicks" in America. But its application to the improvement of the human race has been and must for many years to come remain very limited, nor do I see how it can ever be of equal value, because the methods employed in improving a breed of domesticated animals cannot be used for man. The stamping out of undesirable characters would be easy if they were dominants, but, if they were recessives, it would be a long and perhaps impossible process, and even if the worst of all the inherited afflictions of the human race were eliminated, they would still arise again from time to time as fresh mutations.

Looking at heredity alone, can anyone say with justice that a thorough grounding in the basic sciences of chemistry, physics, botany, and zoology is a waste of time for the doctor? The same laws govern heredity in plants and in animals, vertebrate and invertebrate, even in man himself, and there can be no doubt that the parallel cases of inheritance in man and animals have a deep significance. Our understanding of this we owe to these sciences, that have revealed in part the secret of life's endless chain and shown us how, in spite of apparent gaps, it extends unbroken from one generation to generation. Surely the wider the knowledge of them a man brings to his study of medicine the more clearly he will appreciate the essential unity of nature.

ROYAL FREE HOSPITAL.

DR. JANE WALKER, J.P.

THE RETURN OF WOMEN TO MEDICINE.

Women Doctors in History.

THERE are many proofs that from the beginning of time women were quietly and efficiently tending the sick and binding up wounds. Many women doctors were in practice in ancient Greece and Rome. Œnone, the wife of Paris, had the gift of healing, and the Cornish Princess Isolde was a doctor. It has always seemed to me that there is a good deal of evidence for the book of Ecclesiastics having been written by a woman doctor. The authorship is attributed to Kohelith, a feminine word in Hebrew for a teacher. It certainly shows signs of having been written by a somewhat disillusioned person—a state of affairs not altogether inconsistent with the experience of a practitioner of the healing art of some years' standing.

In the Middle Ages learning was not widely diffused, and was not regarded as a gentleman's accomplishment, and was therefore in a certain degree left to women. Ladies of the mediæval households were both nurses and doctors. Miss Kemp Welch in "Six Mediæval Women" gives a most graphic account of the day of one of them. Many heads of nunneries studied medicine, notably St. Hildegarde, who wrote the most famous book on medicine of her time. Then there was the famous school of Salerno, where in the tenth and eleventh centuries was a fine medical school, in which women as well as men taught, wrote, and practised medicine and surgery. In the twelfth century romance, "Le Lai Des Deux Amants," there is mentioned a woman who had studied for 30 years at Salerno, and in that celebrated school had completely acquired the art of medicine. In the romance of Gwaine and Gawin, when he is wounded in his fight with a giant, he is "healed at a fair castle by two maidens who were learned in leechcraft, and they also restored to health his lion." In the Via Sacra round Athens we constantly see Greek inscriptions, such as "To Basile, the Woman Doctor," "Thecle, the Woman Doctor, lies here." In Ostia, the Rhone Valley, in Spain and Africa, many a marble slab has been found erected to women doctors by some grateful patient. Galen mentions Aspasia, from whom he copied many prescriptions, and Cleopatra, a famous gynæcologist, another of his colleagues. There must have been women doctors in Egypt for thousands of years.

There is a story told by a Latin author of the time of the Emperor Augustus, that at one time it was forbidden in Athens for a woman *or a slave* to study medicine. Whereupon a certain woman cut her hair short and dressed as a man, studied and practised medicine with such success that the women pleaded for her. Whereupon the law was repealed, and women were free to study and practise medicine. Bologna had in the eighteenth century at least seven women professors—one, the professor of mathematics, was appointed by the Pope, and another, Anna Maria delle Donne, was appointed professor of obstetrics by Napoleon Bonaparte. There were many medical women in Italy, Germany, France, England, Spain, and Poland, who practised or wrote medical works before the revival of the nineteenth century, but after the fifteenth century the number of women practising medicine became fewer, and finally almost disappeared. In Elizabeth's time, Anne Cooke, who became Lady Bacon, and her sister Mildred, Lord Burghley's second wife, were both described as skilful in surgery and distillation of waters.

In the seventeenth century Margaret, the celebrated Duchess of Newcastle, was taught physic and chemistry. During the Stuart period the sense of public duty, so noticeable in the learned ladies of Tudor times, found its chief expression in the study of medicine.

There is scarcely a description of the upbringing of girls at this time which omits all reference to the study of physics. At home the mother instructed the daughter, but this was not the only means of obtaining information. Women doctors took apprentices. We read in Mrs. Elizabeth Walker's biography that she was very competent both in "physic and chyrurgery." Her medicine store contained at her death a good store of vomits, purges, sudorificks, cordials, pectorals, almost all kinds of syrups, and strong and simple distilled waters. Some women doctors had a fashionable reputation. John Evelyn supped in the City with a gentlewoman called Everard that was a very great Chymist, and obscure country villages had their female practitioners.

When medicine became more of a science, and less of a mystic empirical art, the men of science declared that women were incapable of learning it, and gave them no chance of proving whether they were capable or not. At the same time the old prejudice as to the mental inferiority of women was helped by the new prejudice that every woman possessed of unusual skill was a witch, and deserved to be cruelly done to death. Naturally they ceased to practise medicine. In France it took 300 years of struggle to exclude women from the profession. In Henry VIII.'s reign a law was passed which prevented women from practising medicine unless they were approved by a bishop, who should call unto him four physicians and four surgeons. Apparently no women were examined and approved, but still some of them continued to heal people without payment. The passing of the Medical Act of 1858, though a great advance in many ways, made it impossible for women to practise medicine unless and until a university or corporate body with power to examine them would do so and grant them degrees.

Famous Women and Famous Men.

In our own times the onslaught on the closed and barred gates of the citadel of medicine began with a thirst for knowledge, when women demanded higher education for themselves.

Among the pioneers in the women's medical profession Dr. Elizabeth Blackwell, Dr. Elizabeth Garrett Anderson, and Dr. Sophia Jex-Blake are outstanding. Elizabeth Blackwell's name was entered on the British Register in 1859. The other two first met at a lecture given by Dr. Blackwell in London, and from this meeting was born in them the determination not only to study and practise medicine, but to make this career available to others. After

many difficulties they achieved their own medical education and then, with the help of Mrs. Thorne, managed to infuse others with their spirit and to secure the foundation of the London School of Medicine for Women. Some men were sufficiently enlightened and in advance of their times to see the justice of allowing women to carry on whatever work they felt they could do. In the very early days nearly 200 men doctors had signed a petition in favour of women in medicine. Sir James Paget was one of them, although he did not quite approve of women entering the medical profession.

Sir James Stansfeld's claim to enter the army of famous men as far as we are concerned is that he was the most active agent in getting the Royal Free open to us for practical training through his influence with Mr. Hopgood, chairman of the board of management of the hospital. Later on in the same year the London University agreed to admit women to medical examination and degree. Another great man was Dr. King Chambers, who after urging women to get teaching somehow and then boldly to practise as unregistered practitioners, being ready to submit to examination when called upon, joined in helping to found our school.

It was Dr. F. A. Anstie who definitely promised to become a lecturer if the women would get a school of their own fit for first-class theoretical courses. He believed the school would get teachers from other schools if that were done, and that then, with that evidence of sincerity and energy in work, some hospital or hospitals would give way and grant facilities for clinical teaching and experience. In every move he made or suggested he was right and far-seeing. He held the office of dean for only three months, during which all the arrangements were made for starting the classes in October, 1874, but he died of blood poisoning on Sept. 12th of that year. He was succeeded by Mr. Norton from St. Mary's Hospital, who occupied this post until 1883 and he was also lecturer on anatomy. It will be interesting to students who are entering for the first time to know that it was long before he made a real success of his profession. His total earnings for the first seven years of practice are said to have amounted to two guineas, and yet he lived to ride every morning on a favourite white horse and to own a villa on the Thames as well as his house in London.

A man great in many directions was Dr. William Allen Sturge, who was appointed physician and pathologist to the Royal Free Hospital, when the hospital decided to accept women as students in 1877. He was a brilliant lecturer and a warm supporter of women's medical education. He married Dr. Emily Bovell and they started practice together in Wimpole-street; but Dr. Sturge, however, was too delicate for the severe work of a London practice and they moved to Nice. She had to contend there also against the prejudices which prevailed at that time against medical women, and indeed, even now has not entirely disappeared. Disappointed and ill and saddened, she broke down again, and died in 1885.

Dr. Buchanan Baxter was a very remarkable person. He did not begin to study medicine until he was 30, did not practise till he was 40, and he died at 50. He was physician to the Royal Free Hospital only from 1881 to 1884, but he left an ever-abiding memory and devotion behind him. Mr. Stanley Boyd became lecturer on anatomy with Mr. Norton in 1882, and succeeded him in 1883. His close connexion with the school and all its doings kept up till the time of his death in 1916. There are innumerable famous men and women, both living and who are now gone, who have really gone through a very great deal to enable the present-day young woman and student to find herself where she is. They have indeed laboured that she may enter into her labours with peace and quietness.

The Entering Students.

A few words to the entering students I think is always regarded as an essential part of this address, and a good deal of space has been given in many previous addresses to things like your food, and your clothes, your recreation, and games. I am sure the food you require is that which you like to have, and as for your dress, I regard the modern girl as well and sensibly dressed as it is possible for her to be. The only thing I feel inclined to say to you on this point is, do not let anyone persuade you to wear your skirts longer than you do at present. They are both beautiful, graceful, and really useful, as well as being economical. It is now quite an ordinary thing to study medicine, and very rarely do women doctors not find plenty of work to do. But in spite of the ordinary young woman, as the ordinary young man, taking up the profession of medicine women doctors have still to be a bit better than men of the same standing. They must be equipped, not only with the best theoretical knowledge, but with infinite patience, forbearance, business ability, tact, good health, energy, and courage. They must familiarise themselves with political, economic, and social conditions. At the same time, do not be discouraged if you make mistakes—everyone makes bad mistakes—and they learn far more from them than from all their successes. At the same time, if you start in general practice, as I hope a very large proportion of you will do, that you will probably lead a rather solitary life in a town where there are 20 men doctors to one woman, and that any mistake you make will be handed round the town and be magnified 20 times more than any one of their blunders.

Women must be loyal to each other. It is a great thing for you at this school that so many of your professors and teachers are at the top. It is one of the disadvantages of the co-education schools that most of the people at the top are men. This brings on an undue state of humility with women students, and makes them unable to visualise themselves at the top, at which we ought all to aim. Disloyalty to women takes place where women compete with women for the favours of men, as in love, and where women compete with men for the favours of men, as in our profession. The French say it is men who make women dislike one another, and there is a Latin author who says, "Nothing is more unbearable than a woman with a full purse," and especially is this so when she has made it full by her own exertions. Do not let your loyalty to anyone be mere servility. It is no good truckling to anybody. Never be afraid of what people think of you. Do what you honestly think is right and leave it. Realise that you are human beings first, and women afterwards. Only as you do this will you attain that perfect freedom which we should all have as our aim, both for ourselves and for others.

WESTMINSTER HOSPITAL.

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THE LOCAL GOVERNMENT ACT, 1929.

SIX months from to-day (Oct. 1st) an Act of Parliament will come into full operation known as the Local Government Act, 1929. This Act may truly be described as one of the greatest and most revolutionary advances in public health and social administration which has occurred in this country for over 100 years.

The portion of the Act to which I refer may be quite briefly summarised as follows: The Act transfers to the London County Council, on and after April 1st, 1930, the whole of the medical services, indoor and outdoor, of the poor-law guardians of London, and the whole of the powers and duties of the Metropolitan Asylums Board.

That means in effect transferring to one public authority—viz., the L.C.C.—over 100 public hospitals and institutions for the treatment of the sick, containing about 50,000 beds. Now, inasmuch as the L.C.C.

already provides over 20,000 beds for mental cases in their mental hospitals, and a large number of other beds in a variety of hospitals for various diseases, it will mean that the L.C.C. will have under its own direction and control no less than 75,000 beds, dealing with every variety of disease. That is, about five times as many hospital beds under one public authority as there are to-day in all the voluntary hospitals in the whole of London.

[Dr. Menzies traced the evolution of public health administration in this country during the last hundred years and pointed out that it had proceeded along certain lines of definite logical sequence. There was first communal health, or environmental hygiene, as exemplified by housing, water-supply, sewage and refuse disposal, infectious diseases, and so forth, and then came personal or individual health, as exemplified by the tuberculous patient, the V.D. patient, the orthopædic patient, maternity and child welfare, and the midwife. Moreover, the poor-law authorities of this country had, from the time of Elizabeth, been concerned with the relief of destitution, either in the form of cash or kind, or by means of institutions—viz., workhouses. Poor-law guardians relieve destitution—they have no choice. If a sick poor person could not obtain the medical attention he or she required elsewhere, the poor-law guardians had to provide it—even if the poor-law hospital or infirmary was overcrowded. Voluntary hospitals, on the other hand, made their own selection of cases, and were under no legal obligation to take in any particular patients. He continued :]

The great bulk of hospital treatment of the sick in this country is provided by poor-law guardians out of rates, and by the public health authorities out of rates and taxes, and not by voluntary hospitals—e.g., 350,000 beds in England and Wales, compared to 50,000 in voluntary hospitals—and in London 75,000, compared to 14,000. Not only all these hospital beds are provided and paid for out of rates and taxes, but they are in existence now, and have been for many years past. The London County Council, therefore, is not going, as some people seem to think, to create an entirely new public hospital service in connexion with its duties under the Local Government Act, 1929, but is simply taking over and centralising under one authority what is actually a going concern to-day, and humbly hoping to improve it.

Public opinion has long rebelled against the principle that a person who is technically "destitute," owing to sickness, must, if he is treated by the poor-law guardians, be regarded as a "pauper," and public opinion has prevailed at last. The agitation in favour of transferring the duties of the poor-law guardians with regard to the treatment of the sick to the public health authorities has been going on for over 25 years, and has only now, in the Local Government Act, 1929, been satisfied. The great change which will shortly come about in London and elsewhere is based, not on any mere sentimental whim or political prejudice, but upon the recognition of a principle that if a person is sick and is in need of treatment, and for any reasons he or she is unable to obtain it, then it is the business of the health authority to provide it.

The Effect on the Voluntary Hospitals.

There is a great fear, and a very natural one, that in some way or another the voluntary hospitals of this country will be adversely affected. Those who say that their days are numbered base this fear mainly on the belief that voluntary sources of income will gradually disappear, with the result that in time they will either be bound to receive large financial grants from the public health authority or close their doors. There are others who believe wholeheartedly in the continued generosity and financial support from the charitable public, with possibly some modification or adaptation to meet new conditions—such as massed weekly contributions from working men and women, or some organised form of voluntary sickness insurance, or the conversion of a larger proportion of beds into pay-beds on a higher scale of fees, or a combination of all these and others I have not mentioned.

There is very little, if any, practical experience to help us in making any forecast or coming to any decision on this extremely difficult and perplexing problem. I know of no reason, at all events in London, why there should be anything else but cordial and harmonious coöperation for the common purpose of promoting the welfare of the sick of this great metropolis, and, moreover, if such coöperation were properly established in London, it would be a great example to the rest of the country, and would have far-reaching beneficial reactions throughout England and Wales. For over 20 years past the policy of the London County Council has been cordial coöperation with the voluntary hospitals of London ; the Council has continuously and consistently sought the assistance of voluntary hospitals; at the present moment about £150,000 per annum is spent by the Council in financial grants to voluntary hospitals and voluntary committees in payment for work done on behalf of the Council.

Conclusion.

The London County Council and the members of their medical staff will be called upon very shortly to undertake the greatest responsibility which any single public authority in this world has ever been asked to shoulder. The administration, efficiently and economically, of a hospital organisation containing over 75,000 beds is a stupendous task.

If this task is going to be carried out successfully we shall need the cordial sympathy and wholehearted support of all those who are genuinely interested in the care of the sick. The prestige and good name, not only of the Council, but of London is at stake. All right-thinking persons in every section of the community desire to make our hospital service, both public and voluntary, even more efficient than it is. Therefore, this is emphatically not a time for dissension between the public and voluntary hospital services. It is emphatically a time for coöperation to the best of our ability for a common purpose.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified : Surg. Comdrs. R. A. Brown and J. F. Ainley to *Egmont*, for R.N. Hospital, Malta ; Surg. Lt. J. G. Currie to *Tamar*, for R.N. Base, Singapore.

ROYAL ARMY MEDICAL CORPS.

Maj. M. B. H. Ritchie to be Lt.-Col., vice Lt.-Col. and Bt. Col. W. R. P. Goodwin.

Maj. T. H. Twigg is secd. for serv. under the Colonial Office.

J. M. Gibson to be Lt. (on prob.).

ARMY DENTAL CORPS.

Capt. A. R. Inglis to be Maj.

G. A. Ballantyne, late Capt., A.D. Corps, to be Capt.

INDIAN MEDICAL SERVICE.

Majs. to be Lt.-Cols. : R. F. D. MacGregor, A. L. Sheppard, P. K. Gilroy, J. A. A. Kernahan, M. L. C. Irvine, E. W. O'G. Kirwan, and G. L. Duncan.

Capts. to be Majs. : Shankar Lal Patney, Dwijendra Nath Bhaduri, Raghunath Ganesh Dani, P. F. A. Grant, and Coimbatore Subramania Venkataramanan.

The undermentioned appointments are made : To be Capts. (on prob.) : Capts. R. L. Frost and K. S. Fitch. To be Lts. (on prob.) : W. McAdam, W. McCoach, G. G. M. Davis, D. H. Waldron, E. P. N. M. Early, and E. B. Eedle. To be Temp. Lts. : Khurshed Jilani.

Lt.-Col. M. L. C. Irvine retires.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Reorganisation of Health Services.

THE Department of Health for Scotland has lost no time in issuing directions to the local authorities for preparing their schemes of reorganisation. In a circular dated Sept. 19th the Department analyses the leading powers of the new Act, and promises special circulars later on infectious diseases (including tuberculosis) and venereal disease, milk-supply, unsound food, food and drugs, maternity service, and child welfare and school health administration Meanwhile, in concert with the Scottish Office, it gives general directions for applying the Act in the localities.

The new Act will not come into operation until May 16th of next year, but the circulars are intended to enable local authorities to master the difficulties of detail that are certain to develop between the town councils and the other authorities within the cities, and between the county councils and the burghs within the counties. Only a special study of the duties of these bodies could make intelligible the amount of detail to be adjusted and readjusted. It is enough to say that the health circular emphasises the elements involved in a unifying of the health service under the single authority. One of the chief difficulties will be the incorporating of the school health services with the others. The circular says :—

"The relationship between the public health committee and the education committee, and the division of functions between those committees, will have to be worked out in detail in the light of experience. Meantime, it should be kept in view that the school medical service as a health service should be definitely linked up with the other health services. Such an arrangement will facilitate the development of the service for the pre-school child. On the other hand, the full benefit of a scheme of medical inspection will not be secured unless the school health service is closely associated with education in order that the general principles of hygiene may be applied to the scheme of education, and that in particular all questions affecting individual children may be clearly considered from the educational point of view. The medical officer of health or a special medical officer on his staff must keep in close touch with the development of all schemes of education, and exercise his influence in moving policies in such a way as to secure for the child the best possible conditions for his proper physical and mental development."

Probably the major problem will be the reorganisation of the hospital facilities. The policy of the Department has been expressed in the Mackenzie Committee's Report—namely, complete coöperation between all the hospitals within the district as well as with the teaching medical schools.

"The ultimate object of any hospital policy," says the circular, "must be to bring a complete and efficient hospital service within the reach of all. The Mackenzie Committee considered that this could best be obtained by the full development of both voluntary and public authority services working in co-operation. With this view the Department are in full agreement, and they have noted with pleasure that since the publication of the Mackenzie Committee Report there has been increasing readiness on the part of public authorities and voluntary hospitals to enter into co-operative arrangements. Hitherto the duties of local authorities in the provision of hospital beds under maternity service and child welfare schemes, and schemes for the treatment of venereal diseases, have in many cases been discharged through the agency of voluntary hospitals. Similarly, voluntary institutions provide a good deal of accommodation for tuberculous patients, more especially for non-pulmonary cases. It is probable that in the less populous areas this method may continue to be the most effective way of meeting the need for the provision of additional accommodation, and its desirability is indicated where such an arrangement facilitates the provision of one effective hospital unit, and obviates the building of a number of small units.

"In other areas it may be found expedient that the local authority should itself provide the accommodation, but whichever course is followed, the essential point is that there should be an agreed policy between the local authorities and the managers of the voluntary hospitals.

"Section 27 provides safeguards to ensure that local authorities take reasonable steps to secure co-operation with the voluntary hospitals and the medical schools serving the area of the authority. It is of the first importance that the development of hospital services in every area should be a matter of agreement between the public authorities and the voluntary hospitals. The machinery for securing contact between the public authorities and the managers of voluntary hospitals has been provided by the setting up of regional committees by the voluntary hospitals. A regional committee has been established for each of the four areas centring round the medical schools of the four universities, and a fifth regional committee has been established for the northern area. The machinery for co-ordination has been completed by the appointment of a Central Liaison Committee representing the voluntary hospitals, which will act in liaison between the five regional committees and the Department. The Department consider that the councils will be well advised to make touch with the appropriate regional conmmittee at the earliest possible moment."

The principle of unification extends to diagnostic and treatment clinics as well as to hospitals. For diseases other than infectious, powers of recovery of the costs of treatment are conferred by the Act, but the Act does not require a local authority to make recovery. The view of the Department is, as in the case of maternity service and child welfare, that recovery should not be enforced to an extent that will discourage persons in need of treatment from obtaining it.

Transfer of Poor-law Functions.

Two circulars, dated Sept. 23rd, have also been issued detailing the necessary duties to be transferred from the poor-law to the local authority.

The transfer of the duties performed under the poor-law is even more difficult than the consolidation of health services, and there the question of settlement emerges. The local authorities may provide that any assistance that may be granted either under the Poor-law Acts or under any other Act, shall in future be wholly provided under such other Act, and thus be taken out of the category of poor relief. The town clerk of Edinburgh, however, in an elaborate report submitted to the town council, points out that if the assistance is given under the poor-law, the amount of the assistance given can be recovered from the authorities of other areas, where under the law of settlement liability attaches to these other authorities. But no such recovery can be made where the assistance is not given under the poor-law. Accordingly, if the conditions under which assistance is given in Edinburgh are regarded as more favourable to the recipients than in other areas in Scotland, the tendency may be to attract people to Edinburgh who would not otherwise come, and thus impose upon the Edinburgh ratepayers the burden of assisting persons who do not belong to the city.

In his report the town clerk makes suggestions for a highly specialised system of committees. He says :—

"Many members of local authorities and other persons interested in public administration have recognised that, through the force of circumstances and the pressure of business the Town Council of the future must become more and more a deliberative and less and less an administrative body. The Town Council on this view will, in short, become something of the nature of a Parliament—the local parliament for the City of Edinburgh. It will then concern itself mainly with policy and the general direction of affairs, and it will be left, as far as possible, to Committees to carry that policy into effect and to attend to all the details of administration. Where the duties are so many and so varied it is apparent that each councillor cannot be expected to keep in close touch with every subject which comes before the Council. Individual members of Council, while having a general cognisance of the direction of the policy of each department, will require to specialise in particular branches of municipal administration. It would seem that a system of devolution of duties would greatly assist this process of specialising."

From all these documents it begins to be clear that a genuine revolution in administration has now begun. One main result will be a reduction in the

personnel of the administrative bodies and an increase in the responsibility of the chief officials.

The New Chancellor of Glasgow University.

Sir Donald Macalister, retiring Principal of the University of Glasgow and President of the General Medical Council, is to be nominated as Chancellor of the University. By Sir Donald's friends all over the world this nomination will be received with the warmest good feeling. Only those who are familiar with the administration and growth of the Scottish universities can even approximately estimate the value of his services to Glasgow. It is not only that he has succeeded in establishing a large number of chairs and lectureships but that he has done so, all along, in the light of universal culture. It would be difficult to name from any country a man of greater accomplishment, and after a long and strenuous life he comes into this honour because of his sheer fitness for the post.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Abdominal Tenderness and Unnecessary Operations.

FOR some time Dr. J. B. Carnett, professor of surgery in the University of Pennsylvania, has denied [1] the validity of the doctrine, enunciated by Head and Mackenzie, that cutaneous areas of hyperæsthesia are related to visceral disease. The disease known as chronic appendicitis he declares to be non-existent, saying that nobody has ever described a syndrome characteristic of chronic appendicitis which he is not able to demonstrate in dozens of cases that have had the appendix removed. Parietal tenderness is, he says, due to parietal neuralgia, and is the cause of hundreds of unnecessary operations. Where it is found in the right upper quadrant the gall-bladder is attacked, when in the right lower quadrant the appendix or the tubes or the ovary. Patients are seen showing as many as five abdominal scars who still complain of the original tenderness and pain. It is true that very many of these patients are of a neurotic type, but their suffering is none the less real.

To distinguish parietal tenderness from that due to genuine deep-seated disease Dr. Carnett has developed a technique of his own. The patient's abdomen is first palpated in the ordinary way and the tender area or areas are observed, together with the degree of pressure required to cause pain. The patient is then asked to blow up the abdomen. When the muscles are thus made voluntarily rigid, tenderness will not be elicited in deep-seated disease, because the damaged area will be protected; parietal tenderness, on the other hand, will be as readily elicited as before. Another test is to seize a portion of the skin and fat between the thumb and forefinger and apply increasing pressure. The full force of this squeeze may cause discomfort but will not evoke pain in the absence of a neuralgia. In the neuralgic subjects, however, a very gentle squeeze will often suffice to make them wince. The areas of tenderness will be found to correspond to the peripheral distribution of nerves. If the lower quadrant is affected tenderness will also be found for the breadth of two fingers below Poupart's ligament (ilio-inguinal nerve) and also over an area of the buttock above a line joining the trochanters (ilio-hypogastric nerve). This anatomical distribution of tenderness assists the differential diagnosis and also excludes malingering. The neuralgia may result from toxæmias, from herpes zoster, and from injuries or deformities of the spine. Lordosis is a common cause before 40, while arthritis is common in later life.

Recently I was privileged to attend one of Dr. Carnett's clinics. Most of the patients had already lost the appendix without any lasting relief from the symptoms for which they had suffered operation. Although Dr. Carnett had not seen them previously he was able to demonstrate his signs with complete success, the delimitation of "pinch tenderness" by areas of nerve distribution being quite striking. One could not help remarking that under the conditions of the clinic there was a possibility that suggestion might affect the patient's response, but this can, of course, be ruled out in private practice. Dr. Carnett's teaching is certainly heretical, but there are a few surgeons and a number of internists who believe that it contains an important measure of truth and that a considerable number of appendices are removed without justification. Whether peripheral or intercostal neuralgia is as common as Dr. Carnett believes, only the application of his tests by independent observers can show.

Tick Paralysis.

The common tick of the Rocky Mountains, *Dermacentor andersoni*, may be the carrier of several kinds of illness. There is the true Rocky Mountain spotted fever which closely resembles exanthematic typhus. There is a tick fever without exanthem, with apparently a shorter incubation period and a much lower fatality, which may or may not be a variety of the same disease. There is the quite distinct infection with *B. tularense*, and finally there is tick paralysis. A case of this rather uncommon affliction has lately been reported.[2] When first seen the patient, a boy of 10 years, had a temperature of 100° F. with rapid pulse and weakness. He was unable to walk, and when he tried to stand he had to be supported stiff-legged against the bed. Abdominal and patellar reflexes were absent. On the next day he was drowsy, unable to lift either leg from the bed or to raise his head. There was a partial ptosis of the left upper eyelid and diplopia. The temperature was sub-normal. The boy was then bathed and a tick found on his back was removed. Within three hours he desired to get out of bed and did in fact get out of bed. The next day he appeared to be completely recovered. The rapidity of recovery from these severe symptoms, when once the tick is removed, appears to be typical of this particular tick disease.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Prof. Noorden's New Clinic.

DURING the past ten years or so the Municipal Board of Health has been systematically working to secure better health for Vienna and better treatment of the sick. Tuberculosis has been attacked at its very roots; slums have been destroyed, and over 40,000 light and airy dwellings have been handed over to the working-class population; a hospital for rheumatic diseases, with 350 beds, is in course of construction; three children's hospitals have been added to the city's institutions, and now Prof. Karl Noorden, who from 1906 to 1913 conducted the first medical clinic of Vienna University, has consented to take over a model department in the municipal hospital devoted solely to the study and treatment of metabolic disorders. He will have 50 beds and a staff of selected specialists at his disposal, and will advise the authorities on dietetic problems. His clinic will have a special kitchen where physicians, nurses, and cooks will get suitable instruction. It should be distinctly understood that Noorden's return to Vienna, which he left some years ago for personal reasons, is not due to his appointment to a university chair; his age, which is 70, would prevent such a call. The Municipal Board of Health, however, has thought it a considerable gain to have the coöperation of so important an authority, whilst Noorden, on his side, gets an unlimited opportunity

[1] THE LANCET, 1929, i., 32.

[2] Colorado Medicine, September, 1929, p. 326.

for further research, his position being quite exceptional. He will take up his work here early next year, and it is expected that his "school" for specialists will be a centre of attraction to medical men—and patients—from all parts of the world.

Infectious Disease in Austria.

A report by the Federal Board of Health shows that not a single case of typhus, small-pox, or cholera occurred in June–July. In the same period ten cases of encephalitis lethargica were noted and three cases of acute anterior poliomyelitis; other notifications of fresh cases being scarlet fever, 673 (3 deaths); diphtheria, 587 (12 deaths); typhoid fever, 155 (13 deaths); paratyphoid, 112 (7 deaths); epidemic encephalitis, 5 (1 death); puerperal fever, 26 (6 deaths); trachoma, 49; varicella, 351 (no deaths); and bites by suspected animals, 24 (no deaths). On the whole the health of the population was conspicuously good up till end of July, but since then there has been an epidemic of sore-throat both in Vienna and in many of the health resorts, in spite of the glorious weather we have enjoyed until quite lately. Ordinary colds, followed by otitis media and nasal sinusitis, are somewhat common at present in Vienna, perhaps because of the sudden exchange of an abnormally long heat-wave for cold autumn weather. Some observers think that the large incidence of respiratory infections is traceable to contamination of the water of swimming baths and ponds, which are frequented by enormous crowds of bathers. They hold that chlorine disinfection is not done as thoroughly as is desirable in hot weather.

Immunity to Syphilis.

At a recent meeting of the Vienna Society for Microbiology Dr. Prigge, of Frankfort, said that natural immunity to syphilis consists only in protection against the development of a primary lesion, and does not prevent invasion of the body by spirochætes. In animals apparently resistant to syphilis we see a general infection without symptoms, secondary and tertiary symptoms being sometimes visible much later. Kolle and his collaborators have shown in extensive investigations, lasting many years, that the immunity acquired by the rabbit through infection is not a true immunity. It is not transmissible passively, and the hope of obtaining a serum against syphilis is unjustified. Immunity takes 90 days to develop in the rabbit. The animals are then protected against the manifest effect of a reinfection with a homologous spirochæte; human beings, on the other hand, acquire immunity to heterologous organisms. In case of reinfection the resistance of the "immune" individual prevents the formation of a primary lesion (the chancre-immunity of Kolle), but allows the propagation and multiplication of spirochætes in the body, so that under certain favourable conditions aortitis, tabes, and general paralysis may be induced. Further research, said Dr. Prigge, is still badly wanted to clear up the problem of immunity against syphilitic infection.

The Symptoms of Rabies in Man.

Prof. Schweinburg, the director of the Lyssa Institute of Vienna, not long ago, at the invitation of the Vienna Medical College, gave an account of the chief symptoms of lyssa (rabies) encountered in persons bitten by infected animals. Apart from prodromal local pains at the site of the lesion, mental and nervous supersensitiveness, he said, appear early. The histological picture is that of a diffuse non-purulent encephalomyelitis, with infiltration round vessels and ganglia, the medulla oblongata being chiefly affected. Stimulation of any of the sense organs produces excessive responses. Breathing is difficult and oppressed, the muscles of the pharynx and œsophagus are over-irritable, and go into spasm with every effort of swallowing (hydrophobia). Later on the slightest tactile or sensory irritation (noise, light) produce twitching and spasms of the muscles of deglutition. These symptoms are never absent, and another constant symptom is ærophobia—i.e., spasms are elicited by a light blowing on the patient's face or by a draught of warm or cold air. On the second or third day very marked salivation appears; the quantities of saliva produced are so large that they are spread abroad by breathing or speaking. The temperature, at first normal, runs up toward the end to a very high level; in the blood count mononucleosis often develops, whilst the eosinophils and basophils disappear. After three days the excessive irritability of the central nervous system is exhausted, and the paralytic stage sets in. This is often rapidly followed by death, but sometimes the condition appears to improve, because the spasms disappear and the patients may take food, whilst supersensitiveness is absent. Paralysis of the heart, however, soon ends the patient's life. The paralytic type of lyssa, with absence of the spasmodic stage, is very rare in man—being perhaps relatively common in children—and a recurrent type is still rarer. No treatment is of any avail for manifest hydrophobia, for hitherto all inoculations or vaccinations have proved useless, and the same applies to various forms of chemical, biological, and internal medication. The only effective measure is preventive vaccination, lasting 13 days, and the mortality of such vaccination is now nil.

Obituary.

ERNEST EDWARD GLYNN, M.D. CAMB., F.R.C.P. LOND.,

LATE PROFESSOR OF PATHOLOGY, UNIVERSITY OF LIVERPOOL.

Ernest Edward Glynn died of diabetic coma on Sept. 22nd at Nerquis, near Mold, where he had been living in retirement since his health broke down in the autumn of 1927. He was born in 1873, the eldest son of Emeritus Professor T. R. Glynn, of Tremeirchion, who was for so many years professor of medicine in the University of Liverpool. Educated at Liverpool and at Clare College, Cambridge, Glynn qualified in 1898 and took his M.B. in 1901 and M.D. in 1908. In 1904 he became a Member of the Royal College of Physicians of London and was elected to the Fellowship in 1913. He intended originally to be a clinician and became an assistant physician to the Liverpool Royal Infirmary, acting at the same time as an assistant in the pathological department under Rupert Boyce. He proved such an efficient substitute during his chief's absences abroad, and when he was laid aside by illness, that in 1912 he succeeded him as Holt professor of pathology, and nominally gave up his clinical associations, though he was to the end at heart as much a medical man as an academic pathologist. Glynn was brought up in the broad outlook which includes morbid anatomy, bacteriology, and experimental pathology, and seeks to weave out of them a harmonious knowledge of disease. His students reaped the benefit to a singular degree and, as anyone knows who has acted as external examiner in Liverpool in recent years, they reached a standard of

PROF. GLYNN.
[*Photo by Medringtons, Liverpool.*

interest and knowledge which is quite exceptional. His methods may have been dogmatic; they gave at any rate a clear picture, and after all it is better for a student to have a crystallised scheme which is only partly right than an amorphous mass of muddy uncertainty. His influence and inspiration extended too beyond the undergraduate days of his men and, especially in the last few years, he had been remarkably successful in activating the younger graduates of his school.

Ernest Glynn took a keen interest in the growth of the Pathological Society of Great Britain and Ireland and was its honorary treasurer for many years. He attended its meetings regularly, and many of his contributions to pathological research took the form of communications to this society. He often joined in discussions at the Liverpool Medical Institution and showed there how closely he followed clinical medical progress. His catholic interests are shown also in the variety of topics which he advanced by his original work. To him is chiefly due the recognition of the association between adrenal tumours and sex change in women which has led to the diagnosis and cure of a number of cases, and one of the last things which interested him before he had to give up work was a remarkable example of precocious adrenal virilism in a male infant. Another matter of considerable importance which he, Dr. Howel Evans and their associates have recently developed is the increase in the number of platelets in the blood following operations, childbirth, and probably tissue injury in general which must have a good deal to do with post-operative thrombosis. In earlier years Glynn investigated the opsonic technique and brought forward the simple plan of counting bacteria in a hæmocytometer chamber which has been widely used. Dysentery bacilli, the pneumococcus and pneumonia, the meningococcus, and cerebro-spinal meningitis at one time or another had his effective attention; with lamb dysentery he was as energetic but less successful. An elaborate inquiry into the results obtained in the venereal clinic showed that the addition of mercurial treatment to a course of arsenicals was undesirable. It is no formality to say that scientific medicine will deeply feel the loss of Glynn just when he had reached the height of his productive powers.

Glynn was not married. He lived in the famous house, 62, Rodney-street, where Gladstone was born, with few interests beyond pathology and the motor-car which he drove so furiously. For the last few years of his life he was coping courageously with the disease which ultimately killed him.

LODGE MOOR HOSPITAL, SHEFFIELD.—Extensions to this institution were opened on Friday in last week by Sir George Newman, Chief Medical Officer of the Ministry of Health. The additions include two ward units and an isolation block. Each unit has two wards of 12 beds and two single wards, making a total of 26 beds. With the six wards in the isolation block the accommodation will thus be increased by a total of 58 beds. The one-storey buildings are arranged in V-shape to obtain the maximum of sunshine, and the central duty room is so placed that there is a clear view of every bed in the unit. The extension is part of a larger scheme, upon which work has already been begun.

CHARING CROSS HOSPITAL.—The annual report repeats the claim that this is the lowest in cost per bed of any London hospital. Its 4039 in-patients cost £12 2*s.* 7*d.* each for an average stay of 21 days, and there were 27,689 new out-patients who cost an average of 7*s.* 4*d.* each. There was a surplus of £3000 of income over expenditure, and there is no debt. The site and buildings of the Westminster Ophthalmic Hospital, which were bought for £70,000, will shortly be available, and of the £100,000 which will be the total cost of purchase and equipment, all but £11,000 had been obtained at the end of December last. Owing to the increase in the number of accident cases it will shortly be necessary to enlarge the casualty department. When this has been accomplished attention will be turned to the provision of a new nurses' home elsewhere, thus releasing the Chandos-street block for private paying patients.

Correspondence.

"Audi alteram partem."

RELATION OF THE TONSILS TO RHEUMATIC CONDITIONS.

To the Editor of THE LANCET.

SIR,—The remarks of Mr. Macleod Yearsley in your last issue appear to sum up the general consensus of opinion upon the rôle of the tonsils in acute rheumatism and allied conditions. I have had the opportunity of removing by enucleation large numbers of tonsils for these conditions, having excised all septic tonsils at three large hospitals wherever acute rheumatism, chronic rheumatism, cardiac disease, or chorea were discovered; also for septic eye conditions and tuberculosis more recently. I have, of course, strictly confined myself to unhealthy tonsils, the combination of secretion from the follicles and the circumfaucial infection-ring being my test of a septic tonsil. Septic teeth have been cleared in all cases. I can state very definitely that the perfect "T and A enucleation" does not prevent acute or chronic rheumatism or chorea, though the patient is all the better for the operation (overlooking one unfortunate stirring up of a septic endocarditis). This is especially so in the case of chorea, where many patients have lost their tonsils previously and elsewhere, or may be admitted with a recurrence.

My object in writing is to ask, Can we expect to affect acute rheumatism or chorea by removing the faucial and nasopharyngeal tonsils, whilst leaving behind the lingual tonsil—often visibly septic, and certainly a source of trouble in the upper respiratory tract? Have any of your readers experience of the inclusion of the lingual tonsil in the enucleation operation as a routine? Its complete enucleation is difficult and may give rise to secondary hæmorrhage in a situation difficult to deal with; but to leave it is to leave what in my opinion has been the cause of much infection.

I am, Sir, yours faithfully,

Manchester, Sept. 27th, 1929. WILLIAM WILSON.

To the Editor of THE LANCET.

SIR,—I am in complete agreement with Mr. Macleod Yearsley in his belief that the most frequent source of rheumatism, septic tonsils and septic teeth, lies in the toxæmia which results from chronic intestinal intoxication—so far, that is, as the chronic form of rheumatism is concerned. I do not know enough about the acute to discuss it. I also agree with Mr. Yearsley's opinion that apart from a certain general improvement that must necessarily accrue from the removal of a definitely septic focus, tonsillectomy has no influence upon the incidence or cause of any rheumatic condition, either acute or chronic. My belief that chronic rheumatism is merely a symptom of intestinal stasis or chronic autotoxæmia from the bowel is based on personal observations extending over a period of nearly 20 years. In chronic rheumatic states I have seen cases innumerable where tonsils have been expertly enucleated, and yet the rheumatism has persisted. I have also seen many mouths swept clean of all teeth with no real benefit to the rheumatism. I was therefore driven to the conclusion that there was another factor behind both septic teeth and unhealthy tonsils, and, as the result of treatment of the alimentary canal, I was further driven to the conclusion that here lay the source most likely producing the state existing in the teeth and in the tonsils, and certainly the source of the rheumatism.

I also found that practically every case of intestinal stasis (as proved clinically, by bacteriological examination of the fæces, and by a bismuth transit and a barium enema) was the possessor of unhealthy tonsils and in many cases of septic teeth. But as on

having the teeth and the tonsils removed the rheumatism still remained in statu quo, an active onslaught on the bowel was made. The result of this was that the teeth (I do not refer to chronic *apical* dental sepsis) with ordinary hygienic care cleared up and the signs of tonsillar infection greatly receded. What was more surprising was that the rheumatism vanished, even in cases regarded as almost hopelessly chronic. Treated *from the source of infection* I know of no condition that will yield more satisfactorily to correct treatment; the results are often dramatic in the, apparently, most intractable of cases. But the treatment must be complete and thorough.

I am, Sir, yours faithfully,

A. GRAHAM-STEWART.

Ulster-place, N.W., Sept. 28th, 1929.

VITAL STAINING OF NEOPLASTIC TISSUES.

To the Editor of THE LANCET.

SIR,—In his most interesting paper in your issue of Sept. 21st (p. 603) Mr. Burrows suggests one therapeutic application of the phenomena he describes. I venture to suggest another, capable of experimental proof or disproof. With present operative procedures for neoplastic diseases the excisions have, for well-known reasons, to be very extensive and encroaching widely into normal tissues. If such neoplastic tissues are capable of differentiation by the various dyes, the dye could be injected prior to operation and the actual infiltration into normal tissues could be determined on operation and, in many cases, the field of removal be considerably reduced. Other applications would be in cases of severe burns and senile gangrene to determine definitely the line of demarcation.

In a paper by Mogilnitsky and Podljaschux, shortly to be published in *Die Fortschritte auf dem Gebiete der Röntgenstrahlen*, these investigators have found that trypan-blue is retained in the brains of dogs and rabbits which have been submitted to X rays. X rays (and doubtless γ rays) are, therefore, to be added to the list of irritants cited by Mr. Burrows, and any experiments he has made in this relationship would be of interest. The retention of dye after X ray treatment might confirm the view, held by many radiologists, that the beneficial results of such treatment is perhaps only due to reaction of tissues to irritation by the rays.

I am, Sir, yours faithfully,

BERNARD LEGGETT.

Romford-road, Forest Gate, Sept. 28th, 1929.

THE IMPORTANCE OF THE LIVER IN CHEMOTHERAPY.

To the Editor of THE LANCET.

SIR,—The article by Dr. L. Cunningham and Dr. M. M. Datnow in your last issue (p. 652) confirms, in the main, the work of our cancer research team on the effect of colloidal metals on the liver. There are some points, however, on which we are not in agreement. It is stated that lead selenide, amongst some other preparations, has little action on the liver of animals, but we observe in Table I. that the incidence of jaundice after lead selenide is about the same as after "S7." In our monograph on "Chemotherapeutic Researches on Cancer" published in July, 1928 (of which copies were sent to the Liverpool Medical Research Organisation at their request), the changes in the liver and other viscera are briefly noted; focal necrosis in the liver after lead selenide is recorded there. We have repeatedly found the same changes after the administration of active colloidal preparations of lead, thallium and thorium, differences are of degree only.

There is a risk that readers of this article might conclude that the hepatic factor could be ignored during treatment with colloidal lead selenide, "D4S." We find that we cannot afford to ignore the liver. For some hours before and after administration of "D4S" we give a very light carbohydrate diet. We find that fat digestion progressively deteriorates and that jaundice is readily provoked by a diet rich in fats; this jaundice readily yields to a fat-free diet. The evidence offered for the taking up of the colloid by the cells of the reticulo-endothelial system in the liver is inconclusive. We find that much lead is to be found in the liver in man and animals, much more than is to be found in the neoplasm, but we are not convinced that it is stored in the cells of the reticulo-endothelial system. Very similar granules to those figured are found after administration of many of the electro-negative colloids, even after non-metallic ones, such as the trypan blues. It is thought that these particles are often hæmosiderin derived from hæmolysis and the hæmorrhages which so frequently follow administration of these colloids. We and others have tried to prove that these particles are lead, but cannot obtain certainty.

I am, Sir, yours, faithfully,

A. T. TODD.

Bristol Royal Infirmary Cancer Research Laboratories, Sept. 28th, 1929.

CONGENITAL ECTODERMAL DEFECT.

To the Editor of THE LANCET.

SIR,—In his article last week (p. 656) on congenital ectodermal defect, Prof. A. W. Falconer discusses the points of resemblance to "progeria." He refers to a case shown by Dr. Jean Smith (January, 1929) at the Royal Society of Medicine in which the diagnosis of progeria had been at first suggested. I venture to draw his attention to a case shown at the same Society in October, 1927, by Dr. C. F. Harris as one of progeria, which, however, was almost certainly not one of progeria but one of congenital ectodermal defect.[1] I am, Sir, yours faithfully,

London, W., Sept. 28th, 1929. F. PARKES WEBER.

VACCINATION AND ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—I was much interested to read in your issue of July 27th (p. 185) the report of two cases of encephalitis supposed to be the result of vaccination against small-pox. In my vast experience in India this complication is unheard of. We do get, not seldom, a general or localised eruption similar to vaccinia, but this the vaccinated child, if kept clean, gets over in a couple of weeks' time. May the encephalitis be not due to some condition present in the vaccinated person particularly if vaccinated at an age beyond that of infancy or childhood as happened in these two cases? Is it because we practise vaccination in infancy that such complications as encephalitis are totally absent in this country?

I am, Sir, yours faithfully,

A. F. WINNINGTON DA COSTA.

Sept. 9th, 1929. Civil Surgeon, Bilasper, C.P. (India).

THE BRITISH COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS.

To the Editor of THE LANCET.

SIR,—In the issue of the *Times* of Sept. 27th, in which the composition of the Council of the British College of Obstetricians and Gynæcologists was set forth, my name was included in the list of Councillors. This was a mistake, and I should be obliged if you would publish this letter of correction.

I am, Sir, yours faithfully,

VICTOR BONNEY.

Devonshire-place, W., Sept. 28th, 1929.

[1] Vide the discussion on the case, Proc. Roy. Soc. Med., Section for the Study of Disease in Children, 1927–28, xxi., 15.

MEDICAL SICKNESS, ACCIDENT AND LIFE ASSURANCE SOCIETY, LIMITED.

To the Editor of THE LANCET.

SIR,—The annual general meeting of this Society will be held on Monday afternoon next, Oct. 7th. Three important resolutions, of which due notice has been given, are to be moved at this meeting, but have been withheld from the agenda on the notice calling the meeting. The members of the Society have thus not been made fully aware of all the resolutions on which a vote will be taken. Nevertheless the Board, on finding that the proposer of a resolution, making an age-limit for directors, had received proxies supporting his resolution, have now issued official proxies in their own favour. Official proxies have to my knowledge never been sent out before. Last year when the re-election of a director was contested, the Board decided that it would not be justified in incurring the expense of sending out proxies. How can they justify themselves in doing so this year? I submit that it is not fair dealing for the Board to attempt to get votes from members without giving them full information.

I am, Sir, yours faithfully,
HARVEY HILLIARD.

Hyde Park Gardens, W., Oct. 1st, 1929.

A CASE OF SEVERE SNAKE-BITE IN THE WEST OF ENGLAND.

To the Editor of THE LANCET.

SIR,—A woman was lately walking down some cliffs near Plymouth when she was bitten by a snake on the dorsal aspect of her foot. She immediately had it sucked and a tight handkerchief was put round her ankle. In five minutes, however, a large swelling had developed and she could barely struggle down to a boat to be conveyed back to Plymouth. In a quarter of an hour from being bitten the foot and ankle were very much swollen and she experienced a "tight" feeling across the chest and difficulty in respiration. Her lips swelled up, she began to vomit, and in half an hour she was completely collapsed with a choking feeling in the throat, due to some œdema of the glottis. She was practically pulseless, cold, and sweating; she had incessant vomiting and diarrhœa; her face and lips were swollen enormously and the whole leg was enlarged with a slight vesicular eruption becoming visible. She was given injections of adrenalin (which relieved the throat condition), strychnine, and pituitrin and large quantities of brandy to drink, and was moved to a nursing-home, where the wound was incised and a clot turned out. It was then evident that the wound had directly involved a small vein. Potassium permanganate was rubbed in locally and stimulant injections were continued until her pulse gradually returned six hours later. Within the next two days she rapidly improved; her pulse became normal and no rise in temperature was charted. The leg, however, continued to swell with pitting œdema, and femoral thrombosis was suspected. After four days the swelling suddenly gave way to blotchy discoloration, obviously due to extravasation of blood into the tissues. After this recovery was uneventful.

Does the English adder venom commonly cause any thrombosis directly, or does it produce endothelial damage leading to extravasation into the tissues?

I am, Sir, yours faithfully,
D. W. B.

Sept. 29th, 1929.

HOSPITAL FOR TROPICAL DISEASES.—The space liberated in the premises in Endsleigh-gardens by the removal of the London School of Hygiene and Tropical Medicine, which shared them with the Hospital for Tropical Diseases, is being utilised for the enlargement of the hospital. New wards, a pathological laboratory, and a clinical lecture theatre are being provided. In addition to treating tropical diseases, the hospital teaches medical men who intend to practise in the tropics and the students of the School of Tropical Medicine.

Medical News.

UNIVERSITY OF LEEDS.—At recent examinations the following candidates were successful:—

M.D.

R. Chester, M. S. Scott, and A. Sourasky.

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—F. B. T. T. Drake, W. R. Everatt, G. Hirst, J. Rabinovitch, and M. I. Silverton.

Part II.—W. H. Craven, H. Denton, C. H. Foster, W. L. Hardman, J. N. Mill, L. Hoyle, C. Poniedel, S. Rosenberg, L. Seaton, W. E. Smart, E. J. Wayne, and J. W. Whitworth.

Part III.—*E. J. Wayne, †C. H. Foster, †W. L. Hardman, T. G. Clarke, H. Denton, S. K. Foster, W. Greaves, L. Hoyle, H. T. Knowles, C. Poniedel, Margaret F. Robertson, Mary G. Shawe, and J. W. Whitworth.

* First-class honours.
† Second-class honours.

D.P.H.

Kathleen M. Peacock and Edith A. Whitney.

D.P.M.

C. L. Copeland, W. Fraser, D. T. Gemmell, and J. J. O'Riordan.

FINAL EXAMINATION FOR L.D.S.

Part II.—J. Dobkin, J. W. B. Hargreaves, and Margaret E. M. Hey.

The William Hey Medal for the most distinguished medical graduate of the year has been awarded to Mr. Edward Johnson Wayne. Mr. Wayne has also been awarded the West Riding Panel Practitioners' Prize for proficiency in Medicine.

UNIVERSITY OF LONDON: *Forthcoming Lectures.*—Fixtures for the coming session include five lectures on Blood Plasma and Platelets, by Mr. J. W. Pickering, D.Sc., at King's College, at 5 P.M., on Tuesdays, from Oct. 8th to Nov. 5th; four lectures on the Physiology of the Fœtus, by Dr. A. St. G. Huggett, at St. Thomas's Hospital Medical School, at 5 P.M., on Tuesdays, from Oct. 8th to 29th; four on Secretion of the Digestive Juices, by Dr. R. J. Brocklehurst, at University College, at 5 P.M., on Mondays, from Oct. 14th to Nov. 4th; three on (1) Seasonal Variations of Epidemic Diseases, (2) Milk Epidemics, and (3) Diphtheria Toxin and Antitoxin, by Prof. Thorvald Madsen, of Copenhagen, at the London School of Hygiene and Tropical Medicine, at 6 P.M., on Oct. 14th, 16th, and 18th; four on the Metabolism of the Carbohydrates and Fats, by Mr. J. A. Hewitt, D.Sc., at King's College, at 5 P.M., on Thursdays, from Oct. 17th to Nov. 7th; and six on Human Nutrition, by Prof. V. H. Mottram, at King's College for Household and Social Science, at 5 P.M., on Fridays, from Oct. 18th to Nov. 22nd. Admission to these lectures is free, without ticket.

University of London: University College.—A farewell dinner to Sir Gregory Foster, who retires from the position of Provost of the College on Dec. 31st, will be given by past and present students on Friday, Dec. 20th, at a place in London to be determined later. Those who wish to attend are asked to inform Mr. B. N. Parker, hon. secretary, Old Students' Association, at the College, without delay, adding particulars of their Faculty and dates of student years at the College.

Mr. F. E. Smith, D.Sc., F.R.S., Director of Scientific Research at the Admiralty, has been appointed Secretary to the Committee of the Privy Council for Scientific and Industrial Research, on the resignation of Mr. H. T. Tizard, F.R.S.

CLINICAL LECTURES AT MAUDSLEY HOSPITAL.—A course of clinical lectures will be given at the Maudsley Hospital, Denmark Hill, London, S.E., from Oct. 28th, at 2.30 P.M. daily, except Saturdays. The lecturers will be on Mondays, Dr. A. J. Lewis, on Mental Symptoms and their Genesis; on Tuesdays, Dr. T. Tennent, on Nervous Disorders in Children; on Wednesdays, Dr. Edward Mapother, on Neurotic and Psychotic Syndromes; on Thursdays, Dr. J. S. Harris, on Relations of Mental Disorder to Physical Conditions; and on Fridays, Dr. F. L. Golla, Captain S. A. Mann, and Mr. C. Geary, on the Pathology of Mental Disorders, Laboratory Methods and their Place in Diagnosis, and the Pathology of the Nervous System, respectively. In addition, a discussion on cases in the hospital is held in the wards every Monday, Tuesday, and Thursday at noon, all these lectures and discussions being open to medical practitioners without fee. A course for the Diploma in Psychological Medicine will begin in January Inquiries should be addressed to the Director of the Central Pathological Laboratory at the hospital.

ROYAL DENTAL HOSPITAL OF LONDON: *School of Dental Surgery.*—Dr. Boyd S. Gardner, of the Mayo Clinic, Rochester, U.S.A., will give a lecture at this School in Leicester-square on Monday, Nov. 4th, at 6 P.M. His subject will be "the relationship between medicine and dentistry, emphasising the routine use of the X ray from both a pre- and post-operative standpoint; the necessity of an improved extracting technique, and the significance of laboratory investigation."

Mr. Arthur Greenwood, Minister of Health, has appointed Mr. S. F. S. Hearder to be his assistant private secretary. Miss Susan Lawrence, Parliamentary Secretary to the Ministry of Health, has appointed Mr. G. C. North to be her private secretary; and Mr. E. R. Forber, Deputy Secretary to the Ministry, has appointed Mr. E. C. H. Salmon to be his private secretary.

ROYAL ALBERT INSTITUTION EXTENSION.—The foundation-stone of a new building to be called the Welch Memorial Home was laid on Sept. 27th by Lord Richard Cavendish, Chairman of the Central Committee. This new addition to the Royal Albert Institution at Preston will cost about £10,000, and will provide accommodation for about 50 senior boys, together with the staff. It will commemorate the late Mr. William Gibbins Welch, of Hampson, Lancaster, who was associated for half a century with the management of the institution.

LONDON MEDICAL EXHIBITION.—The exhibition will be held this year at the new hall of the Royal Horticultural Society, Greycoat-street, Westminster, London, S.W., during the week beginning on Oct. 14th. It will be open daily from Monday to Friday inclusive from 12 noon till 6.30 P.M. The exhibition has now been an annual fixture for a quarter of a century, but the organisers, who managed the exhibitions of the Seventeenth International Congress of Medicine, 1913, and the Fifth Clinical Congress of Surgeons, 1914, anticipate that this year's show of drugs and surgical appliances will be the largest yet held. One attraction will certainly be the size and convenience of the new hall in which it is to be held, for all exhibits will be on one level and well lighted. Admission will be confined to doctors, for whose recreation tea and orchestral music will be provided in a spacious reception room overlooking the hall. Practitioners who have not received invitation cards can obtain them on application to the Secretary, the London Medical Exhibition, 194–200, Bishopsgate, London, E.C. 2, or at the hall during the exhibition week.

DONATIONS AND BEQUESTS.—Mr. Keith R. Maitland, W.S., of Edinburgh, left, subject to a life-rent, £2000 each to the Royal Infirmary, Edinburgh, and Royal Edinburgh Hospital for Sick Children; £1000 each to the Convalescent House, Murrayfield; Royal Edinburgh Hospital for Incurables; Royal Blind Asylum and School, Edinburgh; Governesses' Benevolent Society of Scotland; Society for Relief of Indigent Gentlewomen of Scotland; and Queen Victoria's Jubilee Institute for Nurses (Scottish branch).—Mr. John Thomas Chadwick, of Beech-road, Stockport, left, on the death of his sisters, £3000 to Stockport Infirmary and £1000 each to Stockport Working Lads' Association, Stockport Sick Poor and Private Nursing Association, Stockport Institute for the Blind, Deaf, and Dumb, and St. Dunstan's Hostel for the Blind. The ultimate residue in trust for British spa treatment of poor persons, natives, or residents of Stockport, suffering from arthritis, sciatica, rheumatism, neuritis, or gout.—Mr. Thomas Morgan, of the Woodlands, Treforest, Glamorgan, besides other bequests, left £1000 each to Pontypridd Cottage Hospital and to King Edward VII. Hospital, Cardiff.—Miss Margaret Cummings Innes, of St. Swithin's-street, Aberdeen, left £2000 to St. Dunstan's Hostel for Blinded Sailors and Soldiers; £1000 each to the Aberdeen Royal Infirmary, the Aberdeen Royal Hospital for Sick Children, and the Morningfield Hospital, Aberdeen, with some further residual interest.—Mr. Henry Bacon Atkinson, of Adelaide Mansions, Hove, and Knyveton-road, Bournemouth, left £500 to the Sussex County Hospital, and £100 each to the Sheffield General Infirmary, the Sheffield Institute for the Blind, and the Sheffield Royal Hospital and Dispensary.—Mr. James Fleming Fyfe-Jamieson, of Ruthven, Perthshire, left a legacy of £1500 to endow a bed, called the Fyfe-Jamieson bed, in Viewpark Nursing Home, and £5000 to charity.—Mrs. Anna Nockold, of Goffs Oak Villa, Cheshunt, Herts, left over £13,000 to various institutions, including £2000 to Dr. Barnardo's Homes, and £2500 each to the London Temperance Hospital and the Blinded Sailors and Soldiers After-Care Organisation (St. Dunstan's, Regent's Park).—Bequests of over £34,000 were left to charities by the late Mr. Alexander Fowler Roberts, of Fairnilee, Galashiels, manufacturer, including £5000 to the Edinburgh Royal Infirmary and £2000 to the Longmore Hospital, Edinburgh.

THE Minister of Health has appointed a Departmental Committee "to inquire into the administration of the laws relating to the relief of the casual poor and to make recommendations having special regard to the assistance of persons genuinely seeking work and to persons suffering from physical or mental disability." The members of the committee are: the Rev. L. R. Phelps (chairman), Mr. J. A. Dale, Mr. Douglas Hacking, M.P., Sir Arthur Lowry, Dr. A. C. Parsons, Mr. A. Paterson, Mr. A. Shepherd, Mrs. Wintringham, J.P., with Mr. L. N. Ure, of the Ministry of Health, as secretary.

ROYAL MEDICAL BENEVOLENT FUND.—A service in aid of this fund will be held at Liverpool Cathedral at 3 P.M. on Oct. 13th. The Rt. Rev. E. C. Pearce, Bishop of Derby, will preach the sermon, and the Lord and Lady Mayoress will attend. Doctors and their friends are invited to this service. Tickets may be obtained from the local hon. secretary, 28, Rodney-street, Liverpool.

At the two recent meetings of the committee £855 was voted in grants to 64 applicants, and £537 was voted in annuities to 20 beneficiaries over 60 years of age. The following were some of the cases helped with annuities:—

M.R.C.S., aged 79, who owing to deafness and age is unable to follow his profession. His wife's savings have been exhausted by the claims made upon him by his family, and his only income is £52 a year contributed by two nephews. Voted annuity of £70.

L.R.C.P. & S., aged 79, whose savings have all been exhausted. She is the inmate of a home where she has to pay rent of £19 10s. Her only income is the Old Age Pension £26. Voted annuity of £36.

Widow of F.F.P.S., aged 75, who lives with her married daughter whose husband is a Post-office sorter. The widow pays £32 10s. a year to her daughter for board and lodging and her income is Old Age Pension £26. Voted annuity of £26.

Widow of M.B., aged 68, whose daughter is earning 30s. a week and who contributes £52 a year to her mother being her only income. Voted annuity of £26.

Widow of M.R.C.S., aged 74, unable to work owing to her age and has only the Old Age Pension. Voted annuity of £26.

Daughter of M.R.C.S. aged 69. Has an income from investments of £34 a year. Voted an annuity of £25.

Subscriptions and donations should be sent to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

LIVERPOOL SCHOOL OF TROPICAL MEDICINE.—The Mary Kingsley Medal, which is conferred in recognition of distinguished scientific achievement, has been awarded to Dr. G. Carmichael Low, Senior Physician to the Hospital for Tropical Diseases, London; Dr. Guy A. K. Marshall, Director of the Imperial Bureau of Entomology; Emeritus Prof. Robert Newstead, F.R.S., formerly Dutton Memorial Professor of Entomology in the Liverpool School of Tropical Medicine; Dr. A. T. Stanton, Chief Medical Adviser to the Secretary of State for the Colonies; Emeritus Prof. J. W. W. Stephens, F.R.S., formerly Professor of Tropical Medicine in the Liverpool School of Tropical Medicine; and Dr. C. M. Wenyon, Director-in-Chief of the Wellcome Bureau of Scientific Research. The medals will be presented by the chairman of the School, Sir Frederick Bowring, at a banquet in Liverpool on Friday, Oct. 11th.

ST. BARTHOLOMEW'S HOSPITAL DINNER.—The annual dinner of Old Students was held in the Great Hall of the Hospital on the evening of Oct. 1st, with Sir Frederick Andrewes in the chair, the size of the gathering being favourably influenced by the post-graduate course on radium which is in progress at the school. To many of those who attended the Hall itself was almost a novelty, for not only had electric light been installed, but the floor had been relaid and the ceiling redecorated as part of the work of general reconstruction which is going on throughout the hospital precincts. The dinner itself, which was largely attended, was of the usual domestic character, but the absence of a toast list did not prevent the treasurer, Lord Stanmore, from proposing "The Chairman," a toast which was drunk with musical honours. In reviewing the main events of the year Sir Frederick alluded with regret to the unusual number of deaths of seniors, including Church, Duckworth, Cumberbatch, Bowlby, and Harding. He then turned to the attraction of the moment, the new surgical block nearing completion and to be opened early next year. It was, he said, the last word in surgical luxury, alike for surgeon, dresser, nurse, and patient. Every surgeon had a self-contained floor, his own theatre, and his own private room, and last but not least, gas and oxygen was laid on from the basement to every operating table. Only about one-half of the sum of £200,000 spent on this block was yet in sight, but the Hospital had done well so far during its period of reconstruction which began nearly 30 years ago with the new buildings for out-patients, pathology, and

nurses; for of the total £350,000 all but about £58,000 had been paid off in spite of the unfortunate reputation of being wealthy. An appeal would shortly be made jointly for the Hospital and College, the latter being now a corporate body capable of holding funds, although as yet wholly unendowed. He would like to see it able to pay adequate salaries and to subsidise research. As he sat down Sir Frederick's eye chanced on the panel which records the first gift made towards the building of the first wing of the present hospital in 1729, the donor being Sir Richard Brocas, Knight and Alderman, just two centuries ago. Besides the treasurer and the administrative staff of the hospital there were present as guests Sir Humphry Rolleston, Air Vice Marshal D. Munro, the Masters of the six City companies, and Mr. T. A. Lodge, the architect of the new surgical block.

WESTMINSTER HOSPITAL DINNER.—On Oct. 1st about 130 past and present students dined together at Grosvenor House, Park-lane, under the genial chairmanship of Mr. Stanley Dodd, who was supported by Sir James Purves-Stewart, Dr. F. N. Kay Menzies, Dr. A. S. Woodwark, Dr. F. F. Bond, Dr. Florence Barrie Lambert, Mr. de Salis (chairman of Springfield Mental Hospital), and Mr. A. E. W. Marshall. Mr. Marshall proposed the toast of the Medical School, of which he is chairman. He praised the energy of their dean, Dr. Woodwark, in organising post-graduate courses which were widely appreciated, especially those on radium. Dr. Woodwark, in response, said the hospital was now starting on its 210th year and the school on its 96th, and that last year it had its record number of students. A great event during the year was the acquisition, mainly through the kindness of Mr. Woolf Barry, Colonel Bulkeley, and Dr. Reginald Worth (medical superintendent of Springfield Mental Hospital) of a fine sports pavilion which could be reached from the hospital in half an hour. The school was looking to the future with every confidence in its capacity to provide an excellent medical training combined with every facility for athletics. The chairman submitted the toast of Past and Present Students, recalling the days when students had not the amenities enjoyed by the present generation. He ended with wise and breezy advice to those who were now beginning their careers. Dr. F. F. Bond and Mr. A. S. Daniel, the hon. secretary of the Students' Club, replied to this toast. The latter voiced the gratitude of the students to those who had combined to provide them with a sports ground and pavilion. Mr. de Salis expressed the pleasure felt by the Springfield Mental Hospital Committee in helping to supply proper facilities for the students' recreation. Sir James Purves-Stewart proposed the Guests, making mention of the work of Dr. Barrie Lambert as chairman of that committee of the L.C.C. of which Dr. Menzies was executive officer, and of the activities of Mr. K. W. Barry, as chairman of the House Committee, and of Mr. de Salis in connexion with the mental hospital with which the school was associated. Dr. Menzies replied. Mr. Rock Carling proposed the Chairman, whose response ended the formal part of a happy evening.

MIDDLESEX HOSPITAL DINNER.—At the annual dinner held at the Savoy Hotel on Oct. 1st the chairman, Mr. A. E. Webb-Johnson, said that within a few weeks patients would be transferred to the new west wing. The two wards in the new surgical wing were to bear the names of Sir Charles Bell, founder of the Medical School, and Sir John Bland-Sutton. When the present work was complete the hospital would have, among other things, a new nurses' home, residents' house, power-house, pay-block, and institute of biochemistry, whilst the chapel would be enlarged. Nothing now remained but to pull down the right wing and start again; £300,000 would see the job through, and anyone who was at present feeling scared about financial speculation could not do better than choose a good safe investment such as the Middlesex Hospital. The sum of £300,000 given anonymously for the nurses' home was, he thought, one of the greatest if not the greatest gift ever received by a hospital from an individual during his lifetime. Retired nurses were getting the benefit of Dr. Essex Wynter's cottages, 11 of which were now occupied. After offering a cordial welcome to the new matron, Mr. Webb-Johnson referred to the death of Dr. F. J. Wethered, and spoke of the help which the hospital had had from the late Mr. Bernhard Baron. The retirement of Mr. Walter Kewley, the tried and trusted secretary of the hospital, had been a source of great regret, but it was to be hoped that his successor, Mr. S. R. C. Plimsoll, as the son of his father, would keep the hospital well above the safety line. Turning to the Medical School the chairman recalled that during the King's illness the scientific investigations had been done by Middlesex men, and congratulated Dr. L. E. H. Whitby and Prof. E. C. Dodds on their honours. Perhaps, however, the man most entitled to pride in these successes of his students was Prof. McIntosh. During the year the hospital had won two inter-hospital cups, for soccer and sailing. Mr. Eric Pearce Gould had retired from the post of Dean, which he had held with so much distinction to himself and so much benefit to others. His achievements had been many, but fate was ironical and he would probably go down to history as the man who got a drink licence for the School. Mr. Webb-Johnson concluded by wishing every success to the new dean, Dr. T. Izod Bennett. In proposing the toast of the hospital he expressed his admiration for Prince Arthur of Connaught for accepting the chairmanship when he knew what difficult problems had to be faced. In reply to the toast Prince Arthur said there was every reason for optimism. The general public, however, was apt to look on hospitals as rather frightening and repellent, and he wished they could be taught to change this view, and regard them not only as part of the national life, but as something friendly and welcoming. Responding for the Medical School, Dr. Izod Bennett made some amusing observations on the repressed romanticism of neurological surgeons, and Mr. J. N. O'Reilly produced witticisms which in themselves justified his selection as one-third of the Broderip scholar. Mr. Pearce Gould, proposing the toast of the Guests, pointed out that the guests of hospitals usually came in for rather peculiar hospitality. If he had taken a complete history of all the guests at this dinner what a tale he could unfold! Viscount Lee of Fareham, in his reply, said that the profusion of doctors present reminded him of the remark of a poor old woman from London who saw the sea for the first time and said: "My, but it's good to see enough of anything for once." He complained of the dog Latin affected only (he thought) by doctors and gardeners, and mentioned that his popularity seemed to have increased in hospital circles since it became known that, as chairman of the Radium Commission, he possessed a four-gramme bomb of radium. Lieut.-General H. B. Fawcus, Director-General of the Army Medical Services, spoke of the need for coöperation between civilian and military medicine in time of peace. Sir Arnold Lawson proposed the health of the chairman, whom he compared to Moses in his capacity for striking things out of rocks—not, however, by force, but by kind words and winning smiles. This toast was drunk with musical honours, and when Mr. Webb-Johnson replied he did not hesitate to tell Lord Lee that the four-gramme bomb could be safely entrusted to the Middlesex Hospital.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Oct. 8th.—5 P.M., THERAPEUTICS. Dr. Philip Hamill: Some Principles of Therapeutics (Presidential address).

THURSDAY.—8.30 P.M., NEUROLOGY. Dr. Gordon Holmes: Dissociation of the Ocular Movements (Presidential address).

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 5 P.M.) Dr. H. V. Morlock: Case of Pseudo-leukæmia. Mr. Cecil P. G. Wakeley: (1) Case of Congenital Shortening of the Femur. (2) Two Cases of Kohler's Disease. (3) Tuberculous Knee in a Boy of Ten. Dr. Gerald Slot: (1) Case of Actinomycosis. (2) Spinal Tumour. Mr. H. C. Edwards: Nævus of the Tongue. Dr. Dorothy Hare: Subacute Multiple Arthritis with Fibrous Nodules. Other cases will be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Papers: Mr. E. E. Maddox: Demonstration of the Cheiroscope. Miss Rosa Ford: Some Ocular Complication of Nasal Sepsis. Cases and Specimens: Mr. Foster Moore: Case of Blue Sclerotics. Mr. J. Cole Marshall: Cystic Adenoma of the Conjunctiva. Mr. Humphrey Neame: Case of Gunshot Wound of Eyeball with Pellet remaining in the Vitreous. Other cases will be shown.

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY, Oct. 8th.—4 P.M. (in the Great Hall of the British Medical Association House, Tavistock-square, London, W.C.). Sir Josiah Stamp: Alcohol as an Economic Factor. (Norman Kerr Memorial Lecture.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 7th, to SATURDAY, Oct. 12th.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Tues., 2.30 P.M., Dr. Browning Alexander (Ward Round). Thurs., 2 P.M., Mr. H. W. Carson (O.P. Demonstration. No fee).—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. Intensive Course for two weeks. Limited to an entry of 20.—LONDON SCHOOL OF

HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, W.C. Tues. and Thurs., at 2 P.M., lecture-demonstrations by Dr. Carmichael Low and Dr. Manson-Bahr. Further particulars from the Fellowship of Medicine.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS: Annual Conference at Newcastle-on-Tyne.

THURSDAY, Oct. 10th.—10.30 A.M. to 12.30 P.M., Mr. H. A. Mess, Ph.D.: Tuberculosis on Tyneside—A Sociological Survey. 2.30 P.M., Dr. Edouard Rist (Paris), Dr. A. F. Bernard Shaw, Dr. C. G. R. Goodwin, and Sir Thomas Oliver: The Factors that Produce Adult Pulmonary Tuberculosis.

FRIDAY.—10.30 A.M., Scheme of National Propaganda regarding Tuberculosis; Combined Treatment and Technical Education of Tuberculous Youths. 2.30 P.M., Sec. I.: Teaching of Tuberculosis to Under-graduates; Training of Tuberculosis Medical Officers. Sec. II.: Methods of Local Propaganda regarding Tuberculosis; Dentistry in relation to Tuberculosis.

SATURDAY.—9.30 A.M., Visits to Hospitals.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 7th.—2.30 to 5 P.M.: Medical, Surgical and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 7th.—12 noon., Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Adie: Disseminated Sclerosis.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Occupational Neuroses.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Some Heredo-familial Diseases.

FRIDAY.—12 noon., Dr. Purdon Martin: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educational Methods (in Exercise Room).

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Oct. 7th.—1.30 P.M.: Examination of the Mouth and Pharynx.

WEDNESDAY.—1.30 P.M.: Examination of the Larynx.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 9th.—4.30 P.M., Dr. D. Thomson: Common Infections of the Genito-urinary Tract.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 8th.—5 P.M., Dr. W. N. Goldsmith: Anatomy and Physiology of the Skin.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Morphology and Histopathology of Elementary Lesions.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Oct. 9th.—3.30 P.M., Dr. J. F. Halls Dally: High Blood Pressure—What it is and How to Avoid it.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 8th.—4.15 P.M., Mr. H. H. Rayner: The Position of Surgery in the Treatment of Gastro-duodenal Ulceration.

FRIDAY.—4.15 P.M., Mr. C. W. W. Surridge: The Relation of the Medical Profession with Coroners.

Appointments.

KEELE, C. A., M.B., B.S., has been appointed Resident Medical Officer, Freemasons Hospital and Nursing Home, Fulham-road, S.W.

SHARPE, J., M.B., Ch.B. Glasg., D.P.H., Medical Officer to Lanarkshire Joint V.D. Committee.

Certifying Surgeons under the Factory and Workshop Acts: PLATT, A. H., L.R.C.P. Lond., M.R.C.S. (Acton and Ealing); and MARREN, J. P., M.B., Ch.B. R.U.I. (Clwt-y-bout Carnarvon).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Mental Hospital.—Jun. Asst. P. £250.
Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.
Bath, Royal United Hospital.—H.P. At rate of £120.
Bermondsey Parish Hospital, Lower-road, Rotherhithe, S.E.—Res. Asst. M.O. At rate of £400.
Birkenhead General Hospital.—Cas. S. £100.
Birmingham, Dudley Road Hospital.—Jun. Asst. M.O. At rate £200.
Birmingham, Selly Oak Hospital.—Res. Physician. £400–£600. Also Cas. O. at rate of £200.
Birmingham and Midland Ear and Throat Hospital.—Asst. Surg. O. £200.
Birmingham, Queen's Hospital.—Med. Registrar. £200.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.
Bootle Borough Hospital, Derby-road.—Jun. M.O. £125.
Bootle County Borough of—Asst. School M.O. and Asst. M.O.H. £600.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £120.
Bury Infirmary, Lancs.—Sen. H.S. £250.
Carlisle, Cumberland Infirmary.—H.P. At rate of £155.
Carlisle, Cumberland, and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £350.
Carmarthen Joint Counties Mental Hospital.—Jun. Asst. M.O. £300.
Cardiff City Mental Hospital, Whitchurch. — Post-Graduate Research Studentship. £100
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. Chief Clin. Assts.
Darlington County Borough —Deputy M.O.H. £750.
Doncaster Royal Infirmary.—Third H.S. At rate of £150.
Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—Aural H.S. and Cas. O. At rate of £120. Also Hon. Physician.
Folkestone, Royal Victoria Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £125 and £100 respectively.
Gloucester, Gloucestershire Royal Infirmary, &c.—Hon. S. to Ear, Nose and Throat Dept.
Great Yarmouth General Hospital.—Sen. H.S. £150. Also Jun. H.S. £100.
Halifax Royal Infirmary.—Third H.S. At rate of £100.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S. Also Cas. M.O. and Cas. Surg. O. Each at rate of £100.
Highgate Hospital, Dartmouth-park Hill, N.—Third Asst. M.O. £350.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
Hull Royal Infirmary.—Third H.S. Also Asst. H.P. At rate of £150 and £130 respectively.
Inverness Northern Infirmary.—Hon. Radiologist.
Islington Dispensary, 303, Upper-street, N.—Res. M.O. £300.
Larbert, Stirling District Mental Hospital.—Third Asst. M.O. £250.
Leicester Royal Infirmary.—Hon. Asst. Ophthal. S.
Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.
Maidstone, West Kent General Hospital.—H.S. At rate of £220.
Manchester Royal Infirmary.—H.S. for Special Depts. At rate of £50.
Manchester, St. Mary's Hospital—Four H.S.'s. Each at rate of £50.
Manchester, Salford Royal Hospital.—Cas. H.S. At rate of £125.
Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.
Margaret-street Hospital for Consumption, 26, Margaret-street, W.—Hon. Asst. Physician.
Metropolitan Ear, Nose, and Throat Hospital.—H.S. £150.
Metropolitan Hospital, Kingsland-road, E.—H.P.'s, H.S's, &c. Each at rate of £100.
Miller General Hospital, Greenwich-road, S.E.—Out-patient Officer. At rate of £150.
Newcastle-upon-Tyne Eye Hospital.—Hon. Res. H.S. £200.
North Middlesex Hospital, Edmonton, N.—Second Asst. S. £500.
Norwich, Norfolk and Norwich Hospital.—H.P. £120.
Nottingham City Mental Hospital.—Jun. Asst. M.O. £350 to £400.
Nottingham General Dispensary.—Res. Surg. £250.
Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150. Also Anæsthetist, £75.
Rotherham Hospital.—H.P. £180.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Hon. Asst. Surg. Also Surg. Registrars. Each £105.
Royal Naval Dental Service.—Dental Officers.
Salford Royal Hospital.—H.S. £125. Cas. H.S. £125.
St. Andrew's Hospital, Dollis Hill, N.W.—Sen. and Jun. Res. M.O.'s.
St. John's Hospital, Lewisham, S.E.—Res. Cas. O. and Res. H.P. Each at rate of £100.
St. Peter's Hospital for Stone, Henrietta-street, W.C.—Radiologist. £25.
Saint Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. At rate of £75.
Salisbury General Infirmary.—Res. M.O. £150.
Sheffield, South Yorkshire Mental Hospital.—M.O. £400.
Southampton, Royal South Hants and Southampton Hospital.—Cas O. At rate of £120.

Stafford County Mental Hospital.—Second Asst. M.O. £600.
Sudan Medical Service.—M.O. £E720.
Sydney University, N.S.W.—Bosch Chair of Bacteriology. £1500.
Watford, Herts, Peace Memorial Hospital.—Res. M.O. At rate of £150.
West London Hospital, Hammersmith, W.—Hon. Registrar for Throat, Nose, and Ear Dept. House Officer for Children's Dept. At rate of £150. Asst. M.O. At rate of £450. Also three Jun. Asst. M.O's. Each at rate of £350.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. and Jun. Non-Res. H.S's. At rate of £150 and £100 respectively.
Weston-super-Mare General Hospital.—Res. H.S. £130.
Westminster Hospital, Broad Sanctuary.—Wander Scholarship, &c. £250.
Willesden General Hospital, N.W.—Res. H.S. At rate of £100. Also Physician.
Winchester, Royal Hampshire County Hospital.—Res. H.S. At rate of £150.
Woolwich and District War Memorial Hospital, Shooter's Hill, S.E. Res. M.O. £175. Also H.S. At rate of £125.
Worcester General Infirmary.—Jun. Res. M.O. At rate of £120.

Births, Marriages, and Deaths.

BIRTHS.

LANSDOWN.—On Sept. 30th, at Woodcote Grove-road, Coulsdon, the wife of R. B. P. Lansdown, M.B., B.Ch., of a daughter.

MACKENNA.—On Sept. 25th, the wife of Dr. R. M. B. MacKenna, Liverpool, of a daughter.

MCLAGGAN.—On Sept. 29th, to Elsa V. McLaggan, M.B., B.S. (née Adams), wife of J. D. McLaggan, F.R.C.S., of 15, Wimpole-street, W.1—a son.

MARRIAGES.

DOWELL—DOMMEN.—On Sept. 17th, at St. Werburgh's, Derby, Dr. W. H. Dowell, of Castle Donington, to Henriette (Babs) Dommen, of Swiss Cottage, Tutbury.

HUDDY—JUMP.—On Sept. 21st, at the Parish Church, Wimbledon. E. C. Huddy, M.B., B.S. Lond., of New Milton, Hants, to Mary, only daughter of Mr. and Mrs. E. Jump, of Cambridge-road, Wimbledon.

SMITH—HOOGEWERF.—On Sept. 28th, at St. Mary's Church, Egerton-gardens, N.W., Kenneth Shirley Smith, M.D., M.R.C.P., to Alice Wilhelmina, elder daughter of Mr. and Mrs. Edmund Hoogewerf, late of Industries Department, Bengal.

DEATHS.

BOND.—On Sept. 24th, at a nursing home, Eastbourne, Charles Knox Bond, M.D.

FRASER.—On Sept. 26th, Dr. Mathew William Fraser, Rimpton, Somerset, and late of the West African Medical Service.

GLYNN.—On Sept. 22nd, Ernest Edward Glynn, M.D., F.R.C.P., late Professor of Pathology, University of Liverpool, aged 56.

MITCHELL.—On Sept. 27th, at Aberdeen, Peter Mitchell, M.D., C.M., aged 65 years.

SMYTH.—On Sept. 23rd, at St. Ives, Cornwall, William Ardagh Smyth, L.R.C.P., L.R.C.S. Edin.

N.B.—A fee of 7s. 6d is charged for the insertion of Notices of Births, Marriages, and Deaths.

PRINCE OF WALES'S GENERAL HOSPITAL.—This institution at Tottenham is the only large London general hospital which serves a population of three-quarters of a million in the industrial district of north-east London. There are 200 beds, and the report for last year shows that 2796 patients were dealt with, and that their cost, for an average stay of 22 days, was £10 17*s.* 7*d.* New out-patients numbered 28,789 and cost 8*s.* 3*d.* each. The antiquated out-patient department urgently needs to be rebuilt, which would cost £35,000, of which only one-seventh is yet in hand.

BIRMINGHAM CRIPPLES HOSPITAL.—The annual report describes the additions that are being made to the Woodlands Hospital which are to be opened by the Duke and Duchess of York at the beginning of November. There is a new children's ward divided into two sections, one for boys and the other for girls, with 30 beds in each; adult male and female wards each have 20 beds. A nurses' home will accommodate 41 probationers and 8 sisters, and new theatre and massage departments have been provided. In 24 years the Workmen's Auxiliary Committee has given £28,000 to the hospital.

Notes, Comments, and Abstracts.

OBSERVATIONS IN ICELAND.

HISTORY AND HEALTH.

(FROM A SPECIAL CORRESPONDENT.)

IN the summer of 1929 I visited Iceland with a view to getting into touch with the members of the Icelandic Red Cross, studying its work, and ascertaining if there were any ways in which the League of Red Cross Societies, of which the Icelandic Red Cross Society became a member in 1924, could be of service to it. Before undertaking this study visit, I called on Dr. Gregg, of the Rockefeller Foundation in Paris, as he had recently visited Iceland on behalf of the Foundation. The information he most generously put at my disposal provided me with a very useful bird's-eye view of the whole situation, and I started on my journey not only infected with some of his enthusiasm for what he called "a beautiful little rock garden" in the Atlantic, but also grounded in some of the elements of the public health problems of Iceland.

To those who may feel tempted to visit Iceland (and I recommend it as a most curiously fascinating country, calculated to titillate the palate of the most jaded globe-trotter) I would mention the very comfortable route I followed—a special boat-train from King's Cross to Newcastle, a boat that takes only 24 hours to Bergen, and the *Lyra*, which leaves Bergen every other Thursday, and reaches Reykjavik early the following Tuesday, after having touched at the Färoe Islands. The Bergenske Dampskibsselskab, on whose boats I travelled, charge 210 kroner for this journey from Newcastle to Reykjavik, board being included in this first-class ticket. The exchange value of the Norwegian krone is about 18 to the pound sterling.

The visitor to Iceland who intends to do something more than play bridge on board ship and take snapshots of his fellow travellers and other bizarre objects, would do well to study the outlines of its history. It was the last of all the European countries to be colonised, the first colonists settling in A.D. 874. The settlers were chiefly Norwegians, many of them being of noble birth and of too independent a spirit to submit to the rule of Harald Haarfagre, King of Norway. In his interesting anthropological study of Iceland, Prof. Gudmund Hannesson has drawn attention to the influence this process of selection has had on the physique of the Icelander of to-day. He has found that the modern Icelander is taller than his contemporaries in the parent Scandinavian countries, and he assumes that the first settlers were as a class tall men, as well as being chieftains of noble blood. Most of the present-day Icelanders can trace their descent uninterruptedly from one or other of these chieftains, and it is this fact which largely explains the spirit of chivalry and old-world courtesy which permeates all classes. The modern Icelander is something of the *grand seigneur* whose instinctive, but unwritten motto is: *noblesse oblige*. The visitor would do well to remember that the hospitality he receives on some lone farm is not that of some humble crofter, but of a nobleman whose ancestors would have regarded most of the folk who "came over with the Conqueror" as parvenu adventurers.

The first 60 years of the history of Iceland were politically nondescript. In 930 the country became a republic, with an Althing, or Parliament, and a code of laws for the whole country. It was a free and sovereign State which lost its independence in 1262, when it came under the rule of Norway. In 1380 its allegiance was transferred to Denmark, and under Denmark it remained till only a few years ago. In 1918, after many years of difficult negotiations with Denmark, Iceland achieved independence, and it is now a sovereign State again. As an independent monarchy, it is reigned over by the King of Denmark. Next year, on June 26th, 27th, and 28th, Iceland will celebrate at Tingvalla, the volcanically-formed, open-air forum a few miles outside Reykjavik, the thousand-year jubilee of parliamentary government.

The total area of Iceland is 103,000 square kilometres, but the habitable area is small and is chiefly limited to the coast and certain valleys. At Reykjavik the annual mean temperature is 4·1° C., the mean temperature in January, which is the coldest month of the year, being 1·2° C. The mean temperature in July, which is the warmest month of the year, is 10·9° C. Iceland is generally reputed to be very bleak and fog-bound, but in the summer, at any rate, there is plenty of sun, and a solarium in the new hospital at Reykjavik is a tacit protest in concrete against this

reputation. A few miles outside Reykjavik there are conservatories, heated by natural hot springs, in which tomatoes and melons ripen.

The population of Iceland on Dec. 31st, 1927, was 103,317, that of Reykjavik alone being 24,304. This nation is rapidly growing, the population on Dec. 31st, 1925, being only 100,117. The birth-rate in 1927 was 25·6 per 1000, and the death-rate 12·4. In the past, much of Iceland's surplus population has emigrated, and there are approximately 25,000 in Canada and the United States alone. At the present time Iceland can absorb her own surplus population, chiefly because the modern development of her fisheries is bringing her unprecedented prosperity. It is for this reason that the increase in the population concerns only the coastal areas. But though the rural population has stood still, or even dwindled, it is only a matter of time, probably quite a short time, before the rapidly growing network of roads and the exploitation of Iceland's super-abundance of water-power, will people the interior with many times its present population. At present, with almost four-fifths of the country uninhabited, and for the most part uninhabitable on account of glaciers, volcanic deserts, &c., there is something less than one person per square kilometre. The excess of females above males reflects to a certain extent the increased hazards of drowning to which males are disproportionately subjected. In the five-year period 1916–20 almost two-thirds of the deaths from accidents were due to drowning. Many doctors lose their lives in this way; crossing a swollen torrent, the doctor is carried away, while his pony swims ashore.

There are about 100 doctors in Iceland (in 1927 there were 98), 48 of whom act as medical officers of health in as many administrative medical districts. They are, of course, general practitioners as well. In almost every parish there is a trained midwife, and the total number of trained midwives is about 200. Their duties include vaccination, which has been compulsory since 1810. But there are only about half a score of dentists and as many chemists in the whole of Iceland. A medical director is responsible for the administration of all matters concerning public health.

Housing and Town-planning.

Some thousand years ago the dwelling-houses were comparatively large, and the birch wood which then covered the island provided plenty of fuel for the fires burnt in the middle of the room in the old Norwegian fashion. Later, lack of timber for building purposes and of wood for firing compelled the inhabitants to live in small huts of turf and rough stones, providing only some 5 cubic metres for each person. As Prof. Hannesson puts it: "The birch wood forests disappeared. . . . There was no coal, and good peat was scarce. The fire of the hearth was no longer lit. For centuries the Icelanders have lived in almost unheated houses. . . ." This state of affairs is changing, as a rule for the better. But in the rapidly growing villages and towns on the coast there is a serious housing shortage, and the dwellings are apt to be poor as well as overcrowded. The new buildings are usually made of concrete. The double outer walls are provided with an intermediate space which is packed with dry peat dust or chips of cork. These houses are both warm and fire-proof. Central heating is sometimes provided by natural hot springs, and electric light from some neighbouring waterfall. Recent town-planning legislation obliges all communities numbering 500 and upwards to make a survey of the harbour and of as much of the surrounding land as will be required for the growth of the community in the next 50 years. The cost of this survey is borne equally by the Government and the town. All communities having a Government-ratified town plan are subject to Government inspection every fifth year, and all new buildings which do not conform to the town plan are to be immediately pulled down at the cost of the town. This legislation is said to have worked satisfactorily on the whole.

Infant Welfare.

Few figures are so eloquently demonstrative of the progress made during the last decades as those dealing with vital statistics. During the period 1886–95 there were 36 still-births for every 1000 births. During the five-year period 1916–20 this figure was reduced to 29, and during the five-year period 1921–25 there was a further reduction to 25. According to the reports of midwives, 95·4 per cent. of the infants in Reykjavik, and 75·8 per cent. in the country districts, were breast-fed. The average infant mortality of 52·3 per 1000 in the five-year period 1921–25 is among the lowest, if not the lowest, in Europe.

Tuberculosis.

Until the last quarter of the nineteenth century, when housing and sanitation were at a low level and semi-starvation not rare in Iceland, tuberculosis was hardly known. During the last decades, housing, general sanitation, and the nation's diet and standards of cleanliness have vastly improved. Preventive and therapeutic measures in relation to tuberculosis have absorbed increasingly large sums of money. Yet the disease has apparently increased by leaps and bounds. In 1921 the number of notified cases was 745, whereas in 1927 this number had risen to 1100. The rise in the death-rate from tuberculosis was much less abrupt. In the five-year period 1911–15, with an annual average of 147 deaths, it was 1·7 per 1000, whereas in the five-year period 1921–25, with an annual average of 186 deaths, it was 1·9 per 1000. The apparent rarity of tuberculosis in former years may partly be traced to defective diagnosis and notification, but it would also seem that the improvement of communications, and all that this improvement entails, have favoured an actual increase of the disease. This increase has been spread over several decades, and may not yet have reached its maximum. The first sanatorium (Vifisstadir Sanatorium, 140 beds) was not built till 1910.

Drastic and costly measures have been taken to combat tuberculosis. In 1921 a special law was passed, and strict regulations were adopted with regard to notification and the prevention of infection. Disinfection is compulsory when a patient moves or dies, his home cannot be used as a school, and children with open tuberculosis may not attend ordinary schools. The subjects of open tuberculosis may not be employed as school teachers or midwives, nor work in milk shops, restaurants, or provision stores. Children and young persons may not live in the homes of patients suffering from open tuberculosis. The State not only provides sanatoriums and similar institutions, but also defrays three-fifths of the running expenses, except when the patients are in easy circumstances. In practice nearly all open cases are given free treatment for a long period in sanatoriums and hospitals, and the annual cost to the State now exceeds 500,000 kr. Of all the cases notified in 1926, 27·7 per cent. were under the age of 15. Of the patients over this age and suffering from pulmonary tuberculosis 64·5 per cent. were women—a curious sex disproportion which is the more remarkable as only 51·2 per cent. of the patients suffering from tuberculosis of organs other than the lungs were women. About 20 per cent. of the deaths from tuberculosis in 1926 were due to meningitis.

Tuberculosis is rare in cattle; measures have recently been taken against it. In 1923 it was made notifiable. Diseased animals must be inspected by a veterinary surgeon and slaughtered if necessary, the cost of these measures being borne partly by the State, partly by the local authorities.

Leprosy.

Leprosy was formerly very rife in the country, and as late as 1896 there were as many as 236 lepers. In 1898 a 60-bed hospital for lepers was built near Reykjavik. By 1921 the total number of lepers had fallen to 63, and in 1927 this number had been further reduced to 44, 34 of these patients being resident in the hospital. Four new cases were notified in the five-year period 1921–25.

Venereal Disease.

Gonorrhœa became endemic in Iceland about 1890, and syphilis after 1900. As was to be expected, these diseases are practically limited to the seaports, and a considerable proportion of the patients are foreigners. Gonorrhœa and syphilis are increasing. Legislation in 1923 provided for the compulsory notification and treatment of cases of venereal disease, the cost of residence and treatment in hospital being free for persons in necessitous circumstances. The medical officers of health are instructed to conduct educational campaigns against this disease in those areas where it is rife. Persons suffering from venereal disease in an infectious stage are forbidden by law to marry. In 1927 there were 348 cases of gonorrhœa notified, the annual average for the five-year period 1921–25 being 230. As many as 12 of the 34 patients notified as suffering from syphilis in 1927 were foreigners. The annual average of notifications of syphilis in 1921–25 was 25.

Influenza.

There is a deep-rooted conviction in Iceland, both with regard to man and to cattle, that the plagues from which the country has suffered from time to time have been imported from abroad. Doubtless this conviction is well founded. But in the case of cattle, at any rate, it has done much to prevent the improvement of the stock by new and better imported strains. Influenza is no exception to the rule that most infectious diseases are imported, all the serious outbreaks being traced to infection from abroad. The "Spanish influenza" of 1918 caused many deaths, but also conferred an immunity in the survivors which was little impaired when another epidemic wave invaded the country in 1921. This epidemic lasted for five months, reaching its maximum in the third month. Three districts escaped completely by voluntary isolation, and there were many instances of whole parishes and single farms escaping

the epidemic by this means. The epidemic of 1924 lasted for some months, reaching its maximum in the second month. In some districts it spread to almost every home, while in other districts it was much more sporadic as a result of preventive measures or of the immunity left by the waves of 1918 and 1921. The comparatively slow spread of the disease in most districts may have been due in great part to this immunity. The death-rate from the epidemic in 1924 was about 1 per cent. The growing immunity to influenza seems to have created a crop of abortive cases and to have rendered the differential diagnosis of influenza and acute bronchial catarrh very difficult. The latter disease did not spread so rapidly, and the one disease did not confer immunity to the other. Cases of influenza were most infectious in the latter half of the incubation period, and shortly after the outbreak of symptoms, but usually for not more than four days after this outbreak. The age-incidence varied in different epidemics, in some of which few persons under the age of 15 suffered, whereas in others there were many patients under this age. While only 941 cases were notified in 1925 the number of notifications rose to 3115 in 1926, in the latter half of which there was a typical epidemic which spread rather slowly. Most of the persons who had had influenza in 1925 were immune, but in isolated areas, which had not been visited by influenza for some years, the epidemic spread to almost every home and caused considerable havoc.

Epidemic Pleurisy.

In 1911 and again in 1917 there were small outbreaks of this obscure disease. An epidemic in 1923 was investigated by the bacteriologists Dr. Thjötta and Dr. Salvesen, but no specific germs could be found. A serious outbreak occurred in 1926. It began in Reykjavik in June, and it was not clear whether it was imported from abroad or not. The 87 notifications in Reykjavik in June rose to 148 in July and sank to 42 in August, petering out soon afterwards. In the latter half of the year it spread to about 20 districts. The main epidemic ran through the country in four months, reaching its maximum in the second month. The incubation period was short, and the disease began with high fever, sometimes of a remittent character, associated with more or less violent pain in the chest. Sometimes this pain was like that of pleurisy or lobar pneumonia, sometimes it was more diffuse, involving the upper abdomen as well as the lower part of the thorax. The pain was often so severe and the abdominal muscles were so tender that the patients preferred to lie motionless. The stethoscopic examination was sometimes negative but sometimes revealed definite pleuritic rubs over the lower parts of the lungs after the patient had been ill for some days. The illness lasted a week or a week and a half, usually without any signs of bronchial catarrh or influenza. Relapses occurred, notably after exertion or exposure, but no case ended fatally. While the rapid spread of this epidemic over a great part of the country has caused it to be regarded as a modified form of influenza, the facts that it has formerly occurred in small local epidemics, and that its manifestations are in many respects different from those of influenza, are opposed to this conception. Outbreaks of this disease in the middle of the winter weaken the case for regarding it as insect-borne.

Rheumatism.

The number of cases of acute rheumatism observed every year does not vary greatly, nor is there any marked seasonal difference. The disease seldom runs parallel with acute tonsillitis, scarlet fever, or diphtheria. It is usually of a mild type, and not only is it less frequent than in neighbouring countries but it is also comparatively seldom followed by endocarditis. Salicylates have but a slight effect on it, and it is possible that it is often of tuberculous origin (Poncet's rheumatism). The proportion of male to female patients is as 1 to 3. Among the 146 cases of acute rheumatism notified in 1926 there was not one in which heart complications were mentioned.

Lobar Pneumonia.

This disease is frequent in Iceland and its incidence varies greatly from year to year. Thus, in the five-year period 1916–20, the annual notifications averaged 312, whereas in the five-year period 1920–25 this figure rose to 613 cases. In 1926 only 185 cases were notified, whereas in 1925 there were 278 cases. The disease was most frequent in the North and West, and in the months of May and June. The age- and sex-distribution showed some curious features. In over 19 per cent. the patients were under the age of 15. Between the ages of 15 and 65 the percentage-incidence was 52·4 for males and 22 for females. Over the age of 65 this preponderance among males was continued, the respective percentages being 4 and 2·4. In some cases the disease was very contagious, and on one farm all the five inmates were ill at the same time.

Measles.

An epidemic of measles, imported from Norway in 1924, ran through the country and lasted till 1926. Public measures taken in the beginning of the epidemic failed to arrest it, but voluntary isolation was temporarily effective in many districts. It ran on the whole a mild course, with a mortality of about 0·5 per cent. In earlier years, and before the inhabitants had become immunised, the epidemics which swept over the country at long intervals were associated with a high mortality. This epidemic seemed to have come to an end in October, 1925, but in November there was a recrudescence of it, the peak being reached in January, 1926. It died out in August of this year. While the usual duration of epidemics of measles is 14 to 16 months, this epidemic lasted about 26 months—a spell the length of which may be traced to the preventive measures which were adopted in certain districts, and which evidently deferred without permanently aborting the evil. The districts which entirely escaped this epidemic may find measles a very unpleasant rod in pickle when the next epidemic invades the country. Prevention of the disease by the injection of the serum of convalescents was found effective in some districts.

Hydatid Disease.

Some 60 or 70 years ago hydatid disease of the liver caused by *Tænia echinococcus* was so common that about 2 per cent. of the inhabitants were supposed to suffer from it. Now this disease is becoming rare, thanks to the drastic measures taken against it. About 25 years ago Dr. Steingrimur Matthiasson, now in charge of the hospital in Akuryri, the second largest town in Iceland, found that operations for hydatids were the most frequent of all major operations at his hospital, whereas at the present time he can count such operations on the fingers of one hand in the course of the year. In 1863 there was one dog to every three to five inhabitants, whereas at the present time this dog-to-man ratio has been reduced to 1 to 15. Thanks to the energetic efforts of Dr. Gunnlaugur Claessen and his colleagues, no one may keep dogs in Reykjavik, and in certain other communities they are excluded or kept under very close control. The law of 1890 imposed a tax of 2*s.* to 10*s.* on every dog, and enjoined the deep burial or burning of hydatid-infected material found in slaughtered animals. The same law imposed on all town and parish councils the task of purging dogs with areca powder after the slaughtering time in the autumn. Dr. Claessen's recently published work on X ray aspects of hydatid disease, qualifying him for the degree of M.D. in Sweden, promises not only to be a standard work in this field, but is also a good example of the scientific activities of the medical profession of Iceland to-day.

(To be concluded.)

ASPIRIN AS A HIRUDICIDE.

To the Editor of THE LANCET.

SIR,—During the Great War in a district in Palestine where no doctors were easily available, a woman with a sick child who suffered from fever and spitting of blood consulted a pharmacist. The puzzled man invoked his old friend aspirin to combat the fever. An hour after having administered aspirin to the boy the mother returned with two big leeches in her hand, thanking the pharmacist and reporting the cure of the child. Henceforth we made experiments on dogs afflicted with leeches by simply throwing aspirin into their mouths, and in all cases this treatment has proved effective. I believe aspirin is a much better treatment for leeches than the extraction method.

I am, Sir, yours faithfully,

BUTRUS SALAH, M.D.

Jaffa, Palestine, Sept. 18th, 1929.

THE DESTRUCTION OF HOME PESTS.

ALL households, especially those situated in the country, are at some time visited by one if not more of the ordinary home pests such as ants, flies, or mosquitoes. Since these are a menace to public health it is important that everyone should be familiarised with the best methods of exterminating them. A brief knowledge of their habits and life histories is essential if these pests are to be intelligently combated. Since it is easier to cope with them in the egg or larval stages than after they have become adults, Mr. J. S. Bainbridge[1] recounts the habits, life-histories, and tested methods of control of all the common household pests, gives simple practical advice, and includes a number of clear illustrations.

[1] Home Pests and their Destruction. By J. S. Bainbridge, M.Sc. London: William H mann (Medical Books), Ltd. 1929. Pp. 94. 3*s.* 6*d.*

An Address

ON

RECENT AIDS IN THE DIAGNOSIS OF SOME COMMON DISORDERS.

Delivered at the St. Mary's Hospital Post-graduate Course on Oct. 4th

BY T. C. HUNT, B.M. OXF., M.R.C.P. LOND.,
MEDICAL REGISTRAR OF THE HOSPITAL.

HIGH BLOOD PRESSURE.

THE diagnosis of high blood pressure is, of course, easy, and difficulty only arises when its significance has to be estimated.

The upper limit for the normal constant systolic pressure should never, whatever the age of the patient, be above 155 mm. of mercury. This figure is rather lower than used to be accepted, but is probably too high rather than too low. For the diastolic pressure a figure over 95 mm. is always to be considered as abnormal. There is no doubt, however, that remarkable temporary variations in systolic blood pressure may occur, especially under the stress of emotion, fear during examination, and the like, and it is common to find the first reading taken with the sphygmomanometer to be 10, 20, or even 30 mm. higher than subsequent readings.

In this connexion there is one important variation which can often be detected by the sphygmomanometer although the finger may do no more than suspect it. This is the pulsus alternans, which is particularly apt to be found in cases of high blood pressure and is shown by a doubling of the number of beats heard or felt below the arm-band, as the pressure is gradually lowered from the point at which the first sounds appear. The difference between the systolic pressures of alternate beats may be as much as 10 or even 15 mm. of mercury, and such a finding is always of the gravest importance.

The diastolic pressure, which is at least as important as the systolic, shows less variation and should always be recorded with the systolic.

When a persistently raised blood pressure is found it may be hard to determine to what extent (if any) it is associated with definite involvement of the kidney. The exact height of the pressure is no indication of the presence or degree of renal damage. Nor is peripheral arterio-sclerosis by any means constantly present; indeed the hard tortuous arteries so commonly found, for example, in manual labourers are often to be seen in cases where the blood pressure is not raised at all.

Hypertension occurs in practice essentially in three forms: (*a*) as a condition sui generis without changes in the kidney; (*b*) associated with renal arterio-sclerosis (nephrosclerosis arterio-sclerotica); and (*c*) associated with, and probably secondary to, granular contracted kidney of the true inflammatory type. The first of these is called essential hypertension or hyperpiesia; the two latter forms we group together clinically as chronic interstitial nephritis. There are, however, important distinctions between the two members of this group, and since the prognosis is largely dependent upon their separation I propose to say something firstly about a few points in this differentiation, and secondly and more particularly about the early recognition of renal damage of which-ever type it may be.

Arterio-sclerotic Kidney.

Briefly stated, high blood pressure associated with arterio-sclerotic kidneys presents the following features. The systolic blood pressure is subject to fairly wide variations under different circumstances, and may fall considerably with rest in bed. The diastolic pressure is apt to be relatively low, and thus the range between systolic and diastolic is high—i.e., the pulse pressure may be 120 mm. or even more. The patients are most usually elderly, often 60 or over, and frequently nervous and excitable about themselves; their colour is good—that is to say, there is no anæmia. The retinæ show arterio-sclerotic changes, pinching of the veins, and silver-wire arteries, and sometimes hæmorrhages. The prognosis, with suitable treatment, is comparatively good and the cause of death is apt to be apoplexy or heart failure.

Secondarily Contracted Kidney.

The second type, in which the high blood pressure is apparently the result of primary nephritis, corresponds to the true "small white kidney" which follows a recognised or unrecognised acute nephritis. Here the systolic blood pressure is usually far more fixed and seldom varies more than 10 or 15 mm. though it tends to rise somewhat during the course of the day; it is not necessarily very high, but the diastolic pressure is, in comparison, often much raised. The patient is generally younger, perhaps 30 or 40 years of age, and is markedly anæmic. The anæmia is, indeed, such a striking feature that these cases are often described as white hypertension, in contrast to the former type which is called red hypertension. The anæmia is probably the result of a chronic toxæmia, and is so important in prognosis that it is probably correct to say that when the red cell count is 3 million or under the patient will not live longer than two years. In these cases death is commonly from uræmia and the prognosis is bad.

A Differential Test.

In the early stages both these types of patient present themselves, as a rule, as simple cases of high blood pressure, with or without symptoms attributable to this. Of the various symptoms I would mention especially "rheumatic" pains in the limbs, headache (especially occipital), vertigo (sometimes), and dyspepsia (often). Dyspnœa on exertion is particularly common in the arterio-sclerotic type, as also are "rheumatic" pains, whilst headache is especially frequent in the inflammatory type. The early symptoms, however, rarely indicate the extent or nature of the renal damage; polyuria may not be complained of and in both types the urine may not be characteristic in its content of albumin, blood, or casts—all of which may indeed be absent.

It is in the diagnosis of the presence, degree, and to some extent of the type of nephritis in cases of this kind that I would like to call attention to one simple test which, though in no sense new, is yet recent in its application. I refer to the water test of kidney function of F. Volhard and Koranyi. This test is in routine use in almost all continental clinics, and widely in America, and I think it deserves more general recognition in this country. Thanks to the kindness of Prof. F. Langmead I have had the opportunity of applying it on many patients in the wards, and I feel that in such cases as I am discussing its simplicity and usefulness make it of very great value. The test, as I apply it, is as follows.

The patient is instructed to take as little fluid as possible from lunch-time onward, but to eat his ordinary diet; no fluids at all are drunk after 9 P.M. when the bladder is emptied (and the urine discarded). All the urine passed from this hour until 9 A.M. is then collected and measured, and a specimen is saved. At 9 A.M. a pint and a half of weak tea or water is drunk, and the urine is passed hourly for at least four, and if possible six, hours; each hourly specimen is measured and a sample is saved. The test can easily be carried out at home, preferably perhaps over a Saturday and Sunday, and if the hourly collection of specimens is difficult almost as much information may be obtained by examination of two-hourly samples. The specimens are all investigated as regards their volume and specific gravity.

The patient should be in bed during the test, for otherwise extrarenal factors—especially cardiac—are involved which lessen the value of the results. Such conditions as obvious heart failure, gross œdema, or severe diarrhœa, must naturally also vitiate the test, though they will not often be encountered in the type of patient that I am discussing. It is advisable, further, to carry out the test on one or two separate occasions if possible rather than to rely entirely upon one examination.

Night Urine.—The normal patient should not excrete more than about 20 oz. of urine during the night period, and the specific gravity should not be less than 1025. The restriction of fluids before going to bed ensures a maximum concentration in this specimen which normally bears a ratio to the day urine of about 1 to 3. The average volume in health is less than 15 oz., and the average specific gravity 1032 (T. Addis and M. C. Shevsky).

Water Test or Dilution Urine.—All the 30 oz. of fluid drunk in the morning should be excreted within 4½ to 5 hours; it is usually put out in not more than four. More than half—i.e., 15 oz.—should be excreted in the first two hours, and the rate of removal of the test dose is of great importance. The maximum flow should be during the second hour of the test, when the volume should not be less than 10 to 15 oz.; the flow at its maximum point reaches a rate of nearly half an ounce a minute (E. B. Verney); the specific gravity should fall to 1003 or lower. These figures have been obtained over a large series of normal subjects, and may be taken as substantially correct.

Results of the Water Test in Cases of High Blood Pressure.—All are agreed that the earliest evidence of renal impairment is shown by a poor concentration of the night urine. This is especially true of the inflammatory group of cases, in the early stages of which the volume is high (greater than a pint and often two or three pints), and the specific gravity is low. In the arterio-sclerotic kidney these changes are less marked; here the volume at night is slightly increased but the specific gravity is less reduced. Thus, for example, the volume may be 25 oz. and the specific gravity 1018, whilst in the inflammatory kidney the volume may be 40 oz. and the specific gravity 1006. In the *late* stages of both conditions the nocturnal polyuria ceases—a sign, as it were, of "decompensation" of the kidney—but the specific gravity remains fixed at 1010. Thus a small night volume with a specific gravity not greater than 1012 suggests a very serious prognosis.

The output of the test dose is also an excellent guide to the extent of renal damage. In the very lightest degrees there may be an excessive output, so that an abnormally high volume may be passed in four hours—well above the 30 oz. originally given. But the significance of this is somewhat doubtful, and in general it may be said that the less the amount put out of the 30 oz. given the worse the prognosis; the more the specific gravity remains fixed at 1010, the smaller each hourly volume becomes, and the more each equals another in volume the more grave is the impairment. Equality in volume of the consecutive specimens is a sign of serious import but indicates less severe impairment than does great diminution in the hourly amounts.

To some extent the response to the test may, I think, differentiate the nature of the lesion. Thus the inflammatory kidney which acts normally at its maximal excreting power shows a constant polyuria (by day and especially by night) but fails to excrete the added dose of fluid. A typical result is the following, the patient being a man of 55 who was sent home from abroad as a case of peripheral neuritis, with a blood pressure 220 systolic and 135 diastolic.

Hour.	Volume.	Sp. gr.	Hour.	Volume.	Sp. gr.
1st	1½ oz.	1011	4th	1½ oz.	1011
2nd	1 „	1010	5th	2 „	1010
3rd	2 „	1010			

Total excretion in 5 hours—of 30 oz. given—8 oz.

This patient showed a maximum urea concentration of 2·1 per cent. and a blood-urea of 60 mg. per cent., and died six weeks later from uræmia—an outcome which might not have been expected from the results of the urea-concentration test or blood examination alone.

The arterio-sclerotic kidney retains more of its power of excreting water, and most of the fluid given is excreted within six hours; the specific gravity is also lower and may fall in the largest specimen to 1005 or under. The following are two further examples of actual results which I think will demonstrate the value of the test.

A patient, aged 68, of high colour, had some arterio-sclerosis of the peripheral vessels. The blood pressure was 180/125, and there was a history of transitory left-sided hemiplegia. The maximum concentration of urea in the urine after 15 g. of urea was 3 per cent., but the minimum was down to 1·2, so that a range of 1·8 was found, which did not suggest any nitrogen retention in the blood; the blood-urea was in fact 20 mg. per 100 c.cm. There was slight albuminuria but no casts were found. The water test gave the following figures:—

Night urine.—Specific gravity 1015. Volume 23 oz.

Hourly specimens after 30 oz. of fluid—

Hour.	Volume.	Sp. gr.	Hour.	Volume.	Sp. gr.
1st	No urine ..	—	5th	1 oz.	1006
2nd	8 oz.	1014	6th	2 „	1012
3rd	4 „	1008	7th	2 „	1014
4th	4 „	1007			

In this case there is a delay with a moderate retention (11 oz.) at six hours; the specific gravity falls to 1006, giving a total range of 9. There is thus a definite picture of moderate arterio-sclerotic nephritis.

The second case, in contrast to the above, is that of a woman, aged 55, with some traces of albumin in the urine and a blood pressure of 175/110. The urea concentration was 4·2 per cent. after 15 g. of urea and in the dilute specimen 0·25 per cent.—i.e., there was a range of 3·95. The night urine showed a specific gravity of 1019 and volume 14 oz. The blood-urea was 26 mg. per 100 c.cm. The water test showed:—

Hour.	Volume.	Sp. gr.	Hour.	Volume.	Sp. gr.
1st	5 oz.	1010	3rd	5 oz.	1008
2nd	23 „	1003	4th	2 „	1012

Here the total volume of fluid is fully excreted in four hours and the range of specific gravity is high from 1019 to 1003—i.e., 16. This was therefore clearly a case in which a serious renal involvement could be confidently excluded, the only suspicious features being a slight failure of specific gravity in the night specimen and a somewhat excessive output of fluid in the second hour, with a total excretion just above the test quantity given. It will be seen that the volume and specific gravity tests alone were able to eliminate with some certainty any marked degree of arterio-sclerotic nephritis.

The main value of the test lies in estimating the extent of renal damage and is of the greatest value in prognosis. Thus if the specific gravity does not vary appreciably from 1010, and not more than half the test dose is excreted in six hours, the patient is unlikely to live more than a few months. To sum up, I will repeat the main points in estimating the degree of renal impairment.

Early Stages.—(1) A night urine of volume greater than 20 oz. and specific gravity below 1020. (2) Delayed and incomplete excretion of the test dose of water.

Later Stages.—(3) An increasingly smaller difference between maximum and minimum specific gravities, with a night urine of less volume but specific gravity approximately 1010; an equality in volume of the specimens following the fluid, the quantity of each being not more than 2 or 3 oz. (4) Fixation of specific gravity in all specimens at between 1009 and 1012.

In the attempt to differentiate early arterio-sclerotic from early inflammatory cases, we may say that, broadly speaking, the inflammatory kidney shows a greater polyuria, especially nocturnal, a greater fixation of specific gravity, and a greater inability to excrete a test dose of fluid. The arterio-sclerotic kidney shows a more normal daily urine volume, less nocturnal secretion, a higher range of specific gravity between concentrated and dilute specimens, and better power of excreting an excess of fluids.

Nitrogen Retention.

It may be that these distinctions are largely those of the severity of the renal impairment, but in accurate diagnosis and prognosis they are of real importance. They are of especial value in cases of high blood pressure with early kidney damage such as I am discussing, since albuminuria may be slight or absent and a raised blood-urea is a late occurrence.

Further in this stage the urea-concentration test—as usually carried out—may not show any renal defect. Thus in both arterio-sclerotic and inflammatory nephritis the maximum urea concentration in the urine after a dose of 15 g. of urea may be 2 per cent. or over—i.e., within normal limits. If, however, the dilute specimens after the dose of fluid are examined the contracted kidney may show a concentration of 1·9 per cent., or even an unaltered percentage, whilst the arterio-sclerotic kidney shows a figure of, say, 1 per cent. or even less. In this way, as was suggested by Dr. E. G. B. Calvert, estimation of the urea in the night specimen and in the dilute specimen after the fluid will provide a range of urea-concentration test, which gives similar information to the range of specific gravity but is less simple of application.

There is one further point in this connexion—namely, the detection of the presence of nitrogen retention in the blood. Even in uræmia there is not *always* a raised blood-urea, but it is a laboratory finding of great importance. A high blood-urea may be generally inferred when the specific gravity range is less than 3, and the maximum figure about 1010, whilst if the specific gravity in any specimen falls below 1006 it is unlikely to be present. In terms of urea concentration, if the maximum concentration is 2 per cent. or less, and the minimum is not lower than 0·2 to 0·3 per cent. less, the blood-urea is almost sure to be raised. A rough check upon the blood itself is easily available, without recourse to exact laboratory methods, in a simple test devised by Weltmann. This requires the use of two reagents only and is performed as follows:—

Five c.cm. of blood are taken from a vein and an approximately equal volume of trichloracetic acid is added to it at once. The mixture is then shaken and filtered. To the clear filtrate 5 drops of Ehrlich's aldehyde are added—a reagent to which I shall refer later. If the blood-urea is raised above about 40 mg. per cent., which is the upper normal figure, a greeny-yellow colour develops, which is darker and more intense the higher the blood-urea. If no colour develops any appreciable degree of nitrogen retention can be confidently excluded.

This test is simple, sufficiently accurate, and of real value—for example, in cases of coma when uræmia is suspected as the cause.

Types of High Blood Pressure with Early Renal Involvement.

Arterio-sclerotic.	*Inflammatory.*
Age.—Over 40.	Often under 40.
History.—Previous good health.	Previous acute nephritis; often chronic focal sepsis.
Appearance.—Red; excitable.	Pale; lethargic.
Main symptoms.—Dyspnœa; rheumatic pains; angina pectoris.	Headache; dyspepsia; often polyuria.
Blood pressure.—Variable.	Fixed.
Blood.—Sometimes plethora or polycythæmia.	Anæmia.
Ocular changes.—Silver-wire arteries; pinching of veins; hæmorrhages. Later sometimes "fluffy" patches of exudate.	Similar, but with fan-shaped exudate round macula.
Urine.—Albumin, blood, and casts may be present or absent in either type.	
Night urine.—Volume about 20 oz. (max. concentration). Specific gravity about 1018.	Volume more than 20 oz. Specific gravity 1015 or less.
Max. urea concentration.—Approx. 2% or more.	Approx. 2% or less.
Min. urea concentration.—Approx. 1% or less.	Approx. 2%.
Urea range.—Approx. 1% or more.	Approx. 0·2% or less.
Water test.—Good dilution; delay in output, but little retention over 6 hours.	Bad dilution; volumes of specimens small; equal half or less of the fluid excreted in 6 hours.
Specific gravity range.—Fairly good—e.g., 1018 to 1005.	Relatively fixed—e.g., 1015 to 1008.
Blood-urea.—Not raised till late.	Often raised early.
Duration.—Often many years.	Short—1 to 4 years.
Outcome.—Apoplexy; cardiac failure; angina pectoris.	Uræmia; intercurrent disease; heart failure.

Further Guides to the Condition of the Kidney.

The above table shows very schematically the main features which may help in differentiating the early stages of arterio-sclerotic from those of inflammatory kidney; it must not be taken as in any sense a hard-and-fast classification, and is merely meant as a rough guide to which there must be many exceptions. It must be remembered, moreover, that it is possible that these types may be but different stages of one and the same disease, which is probably primarily a vascular one. Nevertheless definite pathological differences can be found post mortem, and in practice the distinction is not an unimportant one. For a full discussion of this point I would refer the reader to Dr. T. Izod Bennett's Goulstonian lectures of 1928.[1]

Diagnostic Significance of the Presence of Urobilin in the Urine.

Urobilin is a biliary derivative which may sometimes appear in the urine and is quite distinct from the true bile-pigments, bilirubin and biliverdin, which are present in the blood and urine in such conditions as obstructive jaundice, and are detected in the urine by the formation of a green ring with either strong nitric acid or (better) a dilute solution of iodine in potassium iodide. Under the term urobilin I include both this substance itself and its probable precursor, urobilinogen, since their occurrence and importance are clinically the same.

The mode of formation of urobilin is as follows. The bile-pigments, bilirubin and biliverdin, are formed from the hæmoglobin of the blood, secreted in the bile by the liver, and reach the intestine through the common bile-duct. In the intestine they undergo a change into urobilin (probably through bacterial action), some of which appears in the stools under the name of stercobilin. Most of it, however, is absorbed back into the blood, reaches the liver again, and is then reconverted into bilirubin. So a circulation of the bile-pigments takes place.

Clearly an excess of urobilin may be present in the blood for two main reasons: (1) an excess of pigments may be formed originally from the blood so that an excess will reach the intestine and thus an excess of urobilin will be absorbed from the gut. (2) The liver may fail to reconvert the normal amount of urobilin which reaches it after absorption from the intestine. This liver function of converting urobilin to bilirubin is one that is easily impaired and appears to suffer in disorders of the liver before its other functions are appreciably affected. Further, with a normal kidney a slight excess of urobilin in the blood leads to its excretion in the urine, where it may be readily detected. The test for its presence is by means of Ehrlich's aldehyde reagent.

This solution—whose full name is para-dimethyl-amino-benzaldehyde—is readily obtainable and keeps fairly well in a dark coloured bottle. About 20 drops are added to an inch or so of urine in a test-tube and the presence of urobilin is shown by the appearance of a bright red colour which is apparent immediately in the cold if large amounts are present, more slowly reaching its maximum in one to three minutes if the amounts are only moderate, and producing only a faint tint on warming if there are only traces.

A strongly positive result with this test is always pathological, but slight traces of urobilin may sometimes appear in the afternoon urine of healthy people. The significance of a positive result is twofold. Firstly, it occurs in conditions where an excess of blood is being broken down; and, secondly, in conditions where liver function is defective. It is thus a simple and valuable test for disorders of the liver and for those of blood destruction. As a rule it is readily possible to distinguish which factor is at work, though both may sometimes be combined. The commonest of the two is that of liver impairment, and the value of this test in two or three common types of liver disorder is undoubted.

Urobilinuria and Defective Function of the Liver.

In *cirrhosis of the liver* the test is usually strongly positive and with other evidence is of very real diagnostic assistance; it may be positive before

[1] THE LANCET, 1928, i., 741.

other tests of hepatic function—such as the lævulose and galactose tolerance tests—show signs of insufficiency. Urobilin has also been shown by many workers to be constantly present in the urine after acute alcoholic excess, and this has even been urged as a legal point in those difficult cases of "drunk-in-charge-of-a-car." Its presence is at least evidence of the temporary damage to the liver which may be produced by alcoholic intoxication.

Secondly, in *catarrhal jaundice*, which we now know to be mainly toxic and not obstructive in nature, the test is positive at a very early stage, considerably before the appearance of the true bile-pigments which give the tests with iodine or nitric acid.

Thirdly, in *heart failure*, the test may be helpful, for an early sign of decompensation is the appearance of urobilin in the urine due to slight congestion of the liver; this, as is well known, may often occur before obvious signs such as dyspnœa, cyanosis, and gross œdema supervene. The dyspepsia and mild abdominal discomfort of apparently compensated mitral cases are often due to slight hepatic engorgement, and in such patients considerable amounts of urobilin may be present in the urine.

There is, moreover, a further point in this connexion to which I should like to call attention. As I stated, a normal kidney will excrete urobilin when it is present in the blood in only very slight excess. In nephritis this power is lost. Urobilinuria is thus an important consideration in cases of frank heart failure due to renal disease; in, for example, the common type of patient of, say, 50 to 60, who is brought to hospital with sudden acute heart failure, severe dyspnœa, œdema, cyanosis, and often auricular fibrillation. The vessels may be thickened, but the blood pressure may have fallen very low; there is often advanced emphysema and bronchitis, and it is sometimes difficult to know if the condition is primarily one of high blood pressure with "renal heart failure," or is the result of chronic pulmonary disease, myocardial degeneration, or pre-existing valvular lesions. The condition of the urine may be almost diagnostic. The usual features of heart failure urine are, briefly, small volume, high specific gravity, great acidity, with generally the presence of a large excess of uric acid. In renal heart failure the specific gravity is not so high—always an extremely bad sign in decompensated hearts—and Ehrlich's aldehyde test is negative; in heart failure with congestion of the kidneys but no previous renal disease there is abundant urobilin in the urine and a red colour appears immediately with Ehrlich's reagent. Thus in heart failure a urine of low specific gravity which gives a negative reaction for urobilin is of very grave significance, and suggests great care in the administration of diuretics, particularly of the new mercurial types, such as novarsurol or salyrgan, or even the simpler drugs such as calomel itself.

Whilst speaking of the subject of the urine in heart failure, I may perhaps mention a test which has recently been introduced from America and has been highly spoken of in Vienna and elsewhere, though I cannot myself vouch for its accuracy. It may be put in the form of an aphorism and is simply this: "If the urine in heart failure remains acid to methyl-red in spite of treatment, the patient will not recover." A few drops of this indicator, which is readily to be had, are added to about 5 c.cm. of urine, and high acidity is shown by a permanent red colour, using a control of the untreated urine; when the acidity lessens the indicator gives only a yellow colour. Thus if the urine remains red to methyl-red in spite of treatment, the prognosis must be considered hopeless. I would commend this test as possibly useful, but it requires confirmation in a larger number of cases.

Urobilinuria in Hæmolytic Conditions.

Returning to the second uses of the test for urobilin in the urine, its value is more limited. It is positive in conditions of excessive hæmolysis or blood destruction, such as occurs in malaria, the most important of which is pernicious anæmia. Here, owing to the abnormal hæmolysis, a positive aldehyde reaction is almost constant, and this fact may be useful in the differential diagnosis of pernicious anæmia from, for instance, carcinoma of the stomach. There is often a lemon-yellow tint of the skin in both diseases; in both there are abdominal symptoms, and radiography and blood examinations are not always easily obtainable. In a case with these symptoms a positive urobilin test is highly suggestive of a hæmolytic anæmia, and demands a full blood count without delay.

In all forms of hæmolytic jaundice—of which pernicious anæmia is an example—large amounts of urobilin are present in the urine unless there is associated severe nephritis. In obstructive jaundice it is necessarily absent, since no bile can reach the intestine to be converted into urobilin. The test may thus distinguish between hæmolytic jaundice, in which it is positive but the iodine test is negative, and obstructive jaundice, in which it is negative but iodine shows the presence of unaltered bilirubin. In such conditions the van den Bergh reaction in the plasma may not always be decisive, and, moreover, possesses the great disadvantage that if the blood is not tested within at the most two to three hours after its withdrawal from the vein, the results are fallacious. It is thus futile to carry out this test on blood specimens delivered through the post.

Urobilin in Hæmorrhage.

In extensive internal hæmorrhage an excess of blood-pigment is absorbed into the blood, and large amounts of urobilin may be passed in the urine. The test is, therefore, used widely abroad in the differential diagnosis of such conditions as ruptured ectopic pregnancy, and has a particular value in the diagnosis of hæmorrhagic infarction. For example, in pulmonary infarction, which may often cause difficulty in diagnosis, the test becomes positive some six to eight hours after the infarction, and remains strongly positive during the first two or three days, while the bulk of the broken-down blood is being absorbed. The value of the test in this connexion is stressed by continental authorities, and I have myself watched the appearance and disappearance of urobilin in the urine in two such cases.

To sum up, Ehrlich's aldehyde reagent is a useful addition to the small list of urinary test substances which are required in practice, and with due appreciation of the causes that may lead to its appearance, the presence of urobilin in the urine is a valuable diagnostic sign. The reagent is also helpful, as I have mentioned, as giving a rough test for the detection of a raised urea-concentration in the blood, with which it gives a greeny-yellow colour to the otherwise colourless blood filtrate.

Biliary Drainage.

The next diagnostic aid of recent introduction that I want to describe is one which may perhaps be considered somewhat impracticable. It is the examination of the bile obtained by duodenal catheterisation. Although this procedure has not been widely taken up in this country, I feel that it has a considerable value. I have had the opportunity of carrying out such an examination in 51 cases so far, and would like briefly to mention a few points about its usage which I have mainly learnt from my own experience. The test demands a lot of patience—both from the physician and from the patient—but very little apparatus. For those who can afford the time necessary it is simple to carry out.

Technique of Duodenal Catheterisation.—An ordinary Einhorn fractional test-meal tube is used, which is about the diameter of No. 6 rubber catheter. This is swallowed by the patient (who should have fasted for at least eight hours) up to the first ring on the tube. There is rarely much difficulty in this and cocainisation of the throat is not advisable since sensation returns during the course of the test and may lead to serious retching at an inopportune moment.

The gastric contents are withdrawn and the stomach is washed out with a few syringefuls of distilled water. The tube is then pushed down to the second ring, a distance of 28 inches, and the patient is turned on to the right side with the buttocks raised by a pillow; this position aids the

passage of the tube through the pyloric sphincter. This may take place almost at once, and is shown by the aspiration of a small quantity of alkaline bile-stained fluid—the duodenal content. It may, on the other hand, take a long time—often up to two or three hours—and one American investigator has recorded waiting 14 days for the tube to pass the pylorus! If there is delay I have found the sipping of a few ounces of very hot water useful, and slight withdrawal and reinsertion of the tube may sometimes be necessary; twice I have used atropine gr. 1/150 subcutaneously with success to aid relaxation of the sphincter. In general, however, the tube will pass in about one-half to two hours—the average time taken in my cases being one and three-quarter hours.

When the end of the tube is thought to be in the duodenum, a syringeful of water is blown in and if the tube is correctly placed this is not usually withdrawable; if it is still in the stomach the fluid can be at once sucked back, generally with a quantity of mucus. Fifty c.cm. of a 30 per cent. solution of magnesium sulphate are then slowly injected down the tube and some air is forced down after it. I inject the solution at ordinary room temperature, since I have found that warming it is apt to lead to nausea and regurgitation of the tube out of the duodenum; the magnesium sulphate is not as a rule withdrawable. After this, aspiration is carried out at short intervals, and normally the first bile-flow occurs within one to ten minutes. This flow is due to a reflex action from the duodenal mucous membrane and with healthy liver and biliary passages presents the following features. It is almost immediate in onset, rapid, painless, and of about 80 to 120 c.cm. volume. It shows, moreover, a typical gradation. First is a light yellow fluid, then a thick, dark green or brown viscid fluid, and finally it is of a clear golden limpid honey colour. The variations in these three types of bile—which are sometimes called A, B, and C bile—are important. The total flow usually lasts some 15 to 30 minutes.

Deductions from the Test.

I will not enter into the controversial subject of the exact origin of the three types of bile, and will merely refer briefly to some of the points in their examination by which this test may be of assistance. As with the urine and renal function, so may the rate and mode of secretion of the bile give almost as much information as a detailed chemical analysis of its constituents.

Complete failure to obtain bile on two repeated occasions is strong evidence of a stone in the bile passages. In association with jaundice it is almost conclusive of mechanical obstruction. It may thus be helpful in the diagnosis, for example, of carcinoma of the head of the pancreas from severe catarrhal jaundice, which is not always accurately possible by clinical means, and blood, urine, and stool examinations alone. Failure to obtain concentrated bile (bile B) can, though I think rarely, occur with healthy liver and biliary passages, but it is very unusual in the absence of disease to fail to obtain any bile at all if the test is carefully carried out. At the same time in a certain number of cases the attempt may have to be abandoned without it being certain that no bile could be obtained, on account of technical failure generally due to a revolt on the part of patient! In eight of the cases I have examined I must admit to complete non-success on these grounds. Pain during the flow suggests stone and infection in the gall-bladder. A very slow secretion with delayed onset and scanty volume seems also to be found—and I have observed this myself—in cholecystitis with or without stone.

In laboratory examination of the bile, as of the urine, the microscopic findings are of great importance. The presence of pus cells in the concentrated bile, often with many epithelial cells, is typical of cholecystitis; cholesterol crystals are not commonly seen, and when present in fair number are very suggestive of stone. Calcium bilirubinate crystals, which are very fine needles often clumped together into irregular masses, do not have such definite significance, and are often present in apparently normal patients. A large amount of albumin is present with biliary infection, but may also occur with disorder of the liver apart from infection. The normal in my cases has been less than ½ part per 1000, and more than 1 part per 1000 is always pathological. The presence of urobilin is also abnormal, and is seen especially with impaired hepatic function. In my cases large amounts have been present in ten and traces in four.

Catheterisation and Cholecystography.

I have not attempted to go into any detail about this test because I do not feel that its results are at present definite enough to warrant its use as an absolutely general procedure. It requires some practice both in performance and in the interpretation of results. Undue claims have, I think, been made for biliary drainage, just as undue claims were made when the fractional test-meal was first introduced. It nevertheless offers a very real aid in the diagnosis of cholecystitis and cholelithiasis and should, I think, be always employed where the existence of these conditions is in doubt. Its results should be viewed in association with those of radiography of the gall-bladder—a means of diagnosis which is also open to certain fallacies. With the use of the dye methods introduced by Graham a great advance has been made, but the method is still far from perfect, and I should like to say a few words about why this is so.

The dye most commonly used is sodium tetraiodo-phenolphthalein, and is generally given by mouth; at St. Mary's Hospital we are using a preparation named shadowcol, distributed by Messrs. Kodak, which causes very little nausea or diarrhœa. After absorption from the intestine the dye is excreted by the liver into the bile, and reaches the gall-bladder by way of the cystic duct. In the gall-bladder water is absorbed and the dye becomes concentrated so that it is sufficiently opaque to give a shadow on a radiographic film. The densest shadow is thus seen when the patient is a normal subject, and there may be no shadow for one or more of the following reasons: (1) The dye is not sufficiently absorbed from the alimentary tract. (2) The liver is unable to excrete it efficiently. (3) The cystic duct is blocked and bile cannot reach the gall-bladder; or (4) the gall-bladder is incapable of concentrating its contents satisfactorily.

With so many factors involved it is clear why cholecystographic results are not correct in probably more than 50 to 60 per cent. of cases examined. In association with results of biliary drainage, however, they gain in importance, and I feel that a direct examination of the bile is likely to increase in value in the near future. As to its application to bacteriological investigations there is as yet hardly sufficient evidence to speak at all definitely, but it seems to be of real help in the investigation of latent focal sepsis in the gall-bladder. To sum up, I would say that it should always be used when possible in doubtful cases of gall-bladder disease, and would stress especially the importance in diagnosis of pain during the flow, of the rapidity, volume, and appearance of the bile, and of the presence of pus, epithelial cells, and cholesterol crystals in the centrifuged deposit.

INDIGESTION.

In conclusion I should like to say a few words about the differential diagnosis of some of the causes of indigestion, with particular regard to the so-called functional dyspepsias. The common type of patient, most usually a woman, who has abdominal symptoms suggestive of perhaps a gastric ulcer, but in whom we feel confident that a "neurosis" is the true cause, may present great difficulty in diagnosis. Often enough the general behaviour of the patient is characteristic and the pain is usually one that gets worse on going to bed, but never wakes her up once she has got to sleep; it is probably fairly true that "a neurosis never woke a patient." At the same time we often wish for physical signs or laboratory tests that can confirm our suspicions and exclude organic disease.

Of the physical signs of neurosis there is no one alone that can be of genuine assistance, and even a combination of many together can only increase the probability of a functional condition. Of these signs I may mention the exaggerated deep reflexes, brisk abdominals, absent palate

reflex, and the evidences of various stigmata of degeneration such as asymmetries and minor deformities. To these is often added a condition of excessive vasomotor irritability or dermographia, in which a wide red mark rapidly appears after quite gently stroking the skin with a blunt instrument. There is frequently a tachycardia and a low blood pressure which reacts abnormally to mild exertion. A further sign which is not commonly present in persons of "non-neurotic nature" is an absence of the corneal reflex, which is perhaps the most suggestive of all the multitudinous signs of "neurasthenia" that have been proposed.

All these signs, however, are notoriously unreliable and laboratory aids in investigating the case are of real importance. Of these I would especially mention the value of an examination of the stools for *occult blood*, the finding of which definitely excludes a functional condition. It is so readily detectable that it should be looked for in all cases in which the possibility of ulcer or growth arises. In peptic ulcer intermittent bleeding is very common, and in carcinoma of the stomach occult blood is seldom absent and often continuous.

The test is very easily carried out, and the patient need only exclude meat (and meat extractives such as soup), fish, and green vegetables for two days from his diet. The simplest and most reliable technique is that of Gregerson, with the aid of benzidin tablets (benzidin 0·025 g. and barium peroxide 0·2 g.) obtainable from any chemist. One tablet or powder is dissolved in 5 to 10 c.cm. of strong acetic acid (50 per cent.), and a small particle of stool is rubbed up on the end of a match with a few drops of this solution. A positive result is shown by a green to deep blue colour appearing at once or within one to two minutes.

The use of these powders not only simplifies the test considerably, but excludes some of the fallacies of other methods of detecting occult blood. Indeed, A. G. Ogilvie considers that a blue colour obtained within 30 seconds is proof of occult blood in the stools entirely irrespective of the patient's previous diet. I realise that the test is well known, but I think it deserves more frequent application in general practice.

Test-meal analyses are, I am afraid, seldom of great assistance except in carcinoma of the stomach, pernicious anæmia, and duodenal ulcer. In the reflex and toxic dyspepsias of pulmonary tuberculosis, gall-bladder disease, renal disease, or chronic appendicitis, for example, the variations in gastric secretions are so diversely reported that assessment of their true significance is extremely difficult. In functional dyspepsia all types of test-meal results may be obtained.

There is one further test, which is old in origin but recent in its general utilisation, which may be employed with advantage in such cases—namely, the *red cell sedimentation test*. In spite of all that has been written and claimed for this test, especially in relation to pulmonary tuberculosis, the evidence of recent years shows that its real and great practical value lies simply in the differentiation of organic disease from functional disorder. It is in no way specific for any one form of disease, although exaggerated claims have often been made in this respect. It is a test that determines merely the rate at which the red cells fall to the bottom in citrated blood, and even now, in spite of the immense amount of work that has been done upon it, we do not know the exact factors that control this rate of sedimentation. Four volumes of blood are mixed with one volume of 3·8 per cent. sodium citrate and the rate of sinking of the red cells in this dilution is normally slow. I will not describe the exact details of the test, the results of which are recorded either in terms of the time taken for the cells to reach a given height in a standard tube (Westergren-Fahraeus) or of the height reached at a given interval of time (Linzenmeier).

In organic disease, especially where any form of tissue destruction is occurring, the rate of sedimentation is considerably increased. It has now been completely demonstrated that in a given case rapid sinking of the red cells above the normal rate excludes the diagnosis of a purely functional disorder.* A normal rate is unfortunately by no means such certain evidence of the *absence* of organic disease. In suspected gastric neurosis or other functional disorders, therefore, a normal sedimentation rate is confirmatory only of the diagnosis, whilst on the other hand a rapid sedimentation must make us immediately turn to an organic cause for the symptoms concerned. In this somewhat limited field of usefulness this simple and inexpensive test has, I think, a definite value. The details may be found in any recent text-book.

* A rapid sedimentation is normal during the early months of pregnancy.

SYPHILIS OF THE LUNG WITH PULMONARY ARTERITIS (AYERZA'S DISEASE).

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MORE than a hundred years ago Laënnec described dilatation of the pulmonary artery in chronic affections of the lungs.[1] Andral, in 1829,[2] stated that most of the lesions which occur in the aorta are also to be found in the pulmonary artery, but much more rarely. Huchard, in 1893,[3] drew up a table of arteries showing their liability to atheroma. He quoted similar tables by Rokitansky and Lobstein confirming his conclusion that the pulmonary artery is, of all the large arteries in the body, one of the least liable to atheroma. Romberg, in 1891,[4] recorded a case of a man aged 24, in which there was extensive sclerosis throughout the pulmonary artery and its branches and hypertrophy of the right ventricle without apparent cause. Dyspnœa and cyanosis of the skin and mucous membranes were prominent symptoms for many months before death.

Sansom, in 1896,[5] working at the London Hospital, summarised the subject. He concluded that acute and subacute pulmonic endarteritis are mostly due to the extension of septic endocarditis, but that the inflammation may be due to syphilis. In discussing chronic, endarteritis and atheroma of the pulmonary artery he mentioned congenital defects, mitral stenosis, and obstructive diseases of the lung as important ætiological factors.

In 1901, Abel Ayerza, professor of medicine in the National University of Buenos Aires, drew attention in an unpublished clinical lecture to the morbid entity of "cardiacos negros," a syndrome which Escudero[6] claims to have shown in 1905 to be associated with generalised sclerosis of the pulmonary artery and hypertrophy of the right ventricle. Though these two workers had so far only confirmed Romberg's observations we find the term Ayerza's disease, which was used for the first time by Marty in 1909,[7] creeping into general use. Leonard Rogers, in 1909,[8] writing on nine Bengalis suffering from primary atheroma of the pulmonary artery accompanied by extreme right heart hypertrophy but without valvular lesions, concluded that the extensive atheroma of the whole of the pulmonary arteries was syphilitic in origin. The symptoms from which his patients suffered were palpitations, dyspnœa, and dropsy; he did not stress cyanosis. Escudero, however, in 1911,[6] revised his opinion of the pathological basis of "cardiacos negros" in that he now associated the sclerosis of the pulmonary artery with bronchial syphilis.

Advances in the diagnosis of lesions of the pulmonary artery were made by Possett in 1908[9] who emphasised the importance of radiological and electrocardiographic findings.

Arrillaga,[10] in 1913, in a monograph, the English translation of which was kindly lent to me by Dr. Geoffrey Evans, gave a detailed account of "cardiacos negros." His main conclusions were as follows:—

1. The ætiological factors of "cardiacos negros" are chronic pulmonary disease processes, asthma, chronic bronchitis, tuberculosis, and pleural adhesions—in short, all disturbances which have as their final result a state of pulmonary emphysema.
2. These processes evoke, in a pulmonary artery, rendered sensitive by slow infections such as syphilis, paludism, &c., or by intoxications, a sclerotic process which causes a physiological stenosis of the arterial tract which the blood follows on its way to oxygenation.
3. This sclerosis of the pulmonary artery can not only be demonstrated microscopically and histologically in the specimens obtained from these patients, but may also be recognised clinically in hæmoptysis, cyanosis, dyspnœa, and hypercyanotic angina, from which these patients suffer.
4. The right heart undergoes an enormous hypertrophy involving both the auricle and the ventricle which are forced to struggle against the obstacle in the peripheral circulation.
5. This hypertrophy, as well as the dilatation of the pulmonary artery in its early stages, can be clearly seen by radioscopy and radiophotography.
6. The principal symptoms of this entity are: cyanosis, polycythæmia, dyspnœa, cough with mucous or mucopurulent expectoration, cephalalgia, hypercyanotic angina, hæmoptysis, vertigo, an overpowering desire for sleep, &c.
7. The pulmonary stage is a very long one; after about 20 years as a pulmonary complaint it comes to the notice of the clinician in its cardiac phase.
8. The course of the "cardiacos negros" stage is also long and varies from two to five years.
9. Some of the patients may end as "cardiacos negros" and after showing the right gallop rhythm die in their sleep, without having suffered from a trace of œdema. Others, in whom degeneration of the cardiac fibre had taken place, early succumb to ordinary asystole caused by failure of the right heart and die in a state of advanced anasarca. Finally, some die of complications, of which the commonest is broncho-pneumonia.

In subsequent writings, Arrillaga[11 12] insists more positively that syphilis is the essential ætiological factor in the evolution of the "cardiacos negros" and that chronic cardiopulmonary diseases play only a subsidiary part.

Of recent years there have been many contributions, American and European, to the literature of sclerosis of the pulmonary artery. Warthin, in 1917,[13] demonstrated for the first time the *Spironema pallidum* in the wall of the pulmonary artery in a case of syphilitic arteritis and aneurysm of this vessel. Four years later Elizaldo confirmed this finding in one of Arrillaga's patients[14] who had a history of syphilis and a positive Wassermann reaction. M. Giroux, in 1910,[15] and Marcel Thomas, in 1927,[16] contributed detailed theses on lesions of the pulmonary artery. Cheney,[17] in the same year, reported two cases of Ayerza's disease, and concluded that the term should be restricted to cases of sclerosis of the pulmonary artery and hypertrophy of the right heart due to syphilis. Clarke, Coombs, Hadfield, and Todd[21] recently published details of five cases of congenital and acquired lesions of the pulmonary artery which had come to autopsy.

"Primary" Sclerosis of the Pulmonary Artery.

Though many authors have published cases of so-called primary sclerosis (non-syphilitic) of the pulmonary artery the existence of such an entity is in doubt.

Prof. H. M. Turnbull in his early[18] and later work upon the arteries has found thickening of the pulmonary arteries to be almost entirely intimal. The intimal thickenings are composed either of layers of muscle and elastic fibres, which have usually undergone a greater or less degeneration, or of granulation tissue, the endarteritis fibrosa of Jores.

In the formation of the layers of muscle and elastic fibres the elastic stripe separates from the elastic lamella and proliferates. Layers of muscle and elastic fibres of similar structure are normally developed in a similar manner during early years in the aorta and its large elastic branches. An increase in magnitude of the intimal layers of muscle and elastic fibres in these arteries and their development in other arteries can only be regarded as a hypertrophy. Hypertrophied intima is prone to degeneration, particularly in older subjects. Slight intimal hypertrophy is found in the pulmonary arteries of the elderly, and is doubtless due to medial degeneration; one or two minute flecks of atheroma can usually be detected on careful examination with the naked eye, and more extensive focal degeneration of the intima is found under the microscope. Greater degrees of intimal hypertrophy, with greater degeneration, are found in mitral stenosis and all other conditions causing an obstruction to the circulation in the lungs.

Far the commonest form of intimal degeneration in the pulmonary arteries is a degeneration that is superimposed upon hypertrophy and is independent of inflammation. From his experience of the aorta, however, Prof. Turnbull has no doubt that intimal degeneration may complicate chronic inflammation of the pulmonary stem and large branches, although he has not personally had an example. When syphilitic aortitis is confined to the adventitia and media, the overlying intima may hypertrophy and then undergo atheromatous degeneration. Usually the aortitis implicates the intima and causes a granulomatous thickening. When this inflammatory thickening has become sclerotic it usually becomes impregnated with calcium or undergoes true fatty and calcareous atheroma, just as calcareous impregnation and atheroma tend to affect cardiac valves which have been sclerosed by chronic inflammation. Such degenerations secondary to inflammation may doubtless, therefore, occur on the rare occasions when the pulmonary stem and large branches are affected by syphilitic inflammation. In syphilitic and tuberculous arteritis of the smaller pulmonary arteries, and the small arteries in other organs, he has not seen secondary degeneration.

Such intimal degeneration of the larger pulmonary arteries, although a secondary complication of syphilitic inflammation of these larger arteries, might be called primary, in so far as it is not secondary to obstruction within the lungs. Prof. Turnbull has not had an example of such degeneration of the intima of the pulmonary arteries superimposed upon syphilitic or tuberculous inflammation of the subjacent coats. His cases belong to the group in which there is no underlying inflammation. When, in his experience, there has been degenerative thickening of the intima of the pulmonary arteries, there has always been histological evidence of intimal hypertrophy having preceded the degeneration; when the hypertrophy and degeneration have been great, there has always been an obvious cause of obstruction to the pulmonary circulation. He has therefore found no evidence of a primary, non-inflammatory sclerosis of the pulmonary arteries, except the slight atherosclerosis of elderly subjects.

Definition of Ayerza's Disease.

There can be little doubt that many of the cases referred to by Arrillaga in his thesis[10] on "cardiaccs negros" belonged to the already well-known group of chronic cardiopulmonary diseases producing right heart hypertrophy and later failure. Parkinson and Clark-Kennedy's paper on Heart Failure with Normal Rhythm[19] includes a series of such cases. Intimal hypertrophy and degeneration of the pulmonary arteries in such cases were also well known as secondary effects.

The clinical manifestations of such a sequence of events are cyanosis, dyspnœa, hæmoptysis, clubbing of the fingers, and secondary erythrocythæmia. The signs and symptoms of congestive heart failure are usually superadded before death.

Ayerza has left no written account of his observations, but if we are to accept his pupil Arrillaga's writings as embodying the teaching of his master, Ayerza's claim to a place in medical nosology must be based on his discovery of the "black cardiac"

syndrome due to *syphilis* of the lung and pulmonary arteries. The many accurate macroscopic and microscopic descriptions of undoubted syphilitic pulmonary arteritis, confirmed by Warthin and Elizaldo's demonstration of the *Spironema pallidum* in the wall of such arteries, have placed the existence of this entity on a sound footing. Now just as emphysema and non-specific fibrosis of the lungs may, by causing obstruction and hypertension in the lesser circulation, induce intimal hypertrophy and degeneration of the pulmonary artery so also can peribronchial and interstitial pulmonary syphilis induce these changes.

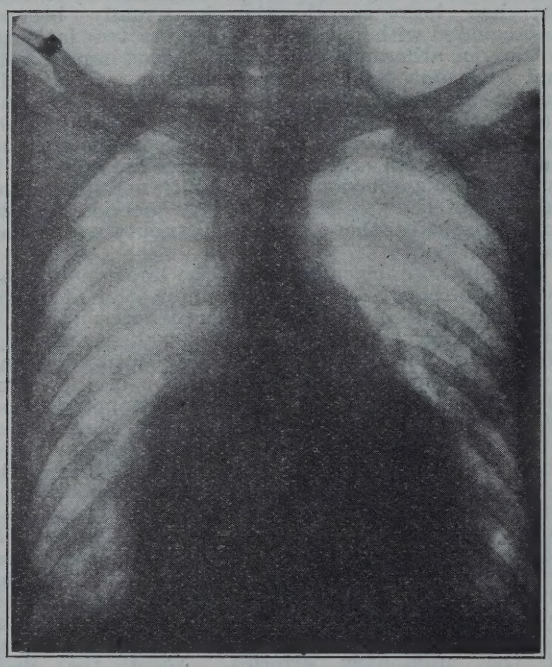
In the case here reported the smaller branches are the seat of obliterating syphilitic arteritis, whereas the pulmonary stem and main branches show the changes due to hypertension—namely, intimal hypertrophy with superimposed atheromatous degeneration.

Clinical Features.

Both sexes are affected about equally, there being 15 men out of 27 cases collected from the literature by Cheney. He says that cases have been recorded in Europe, South America, United States, and India. The patient usually does not present himself with typical symptoms until he has reached the age-period 20–50 years. Cough and expectoration may have been present for many years. Gradually dyspnœa, cyanosis, persistent headache, and drowsiness become added to the picture. Orthopnœa is the rule, and hæmoptysis is common. Oppression in the chest, particularly after exertion, may be a prominent symptom. The somnolence often considerably mitigates the patient's sufferings and may be partly responsible for prolonging the life of the patient after extreme cyanosis has developed. Congestive heart failure more frequently than not supervenes before death. The cardiaco negro may die, however, in his sleep without manifesting any of the signs or symptoms of heart failure.

Though the average case runs a protracted course over many years, others such as ours die within two years of their first symptom.

FIG. 1.



Antero-posterior radiogram of chest. The enlarged globular shadow of the heart is seen. On its left border the prominence immediately below the small aortic knuckle is the pulmonary artery which is larger and denser than normal; the mottling in the lower lung-fields is due to fibrosis and congestion.

On examination the temperature is often subnormal; the pulse and respiration-rate may be 100 and 30 respectively. Cyanosis of the head and neck, mucous membranes, conjunctivæ, and periphery of the limbs is a striking feature even when the patient is at rest; that of the buccal mucosa often extends to the soft palate and posterior pharyngeal wall. The pulse is regular, and the palpable arteries are not unusually thickened. Clubbing of the fingers is usually seen. The blood pressure is within normal limits. Cardiac and hepatic dullness may be encroached upon by lung resonance; the heart sounds will then be distant. Unless emphysema is too great systolic pulsation in the pulmonary artery can be seen and palpated, and the pulmonary second sound is accentuated.

Five to fifteen ounces of muco-purulent sputum may be expectorated daily. The accessory muscles of respiration, particularly the scalenes, hold the barrel-shaped chest in the position of full inspiration. Lung resonance is increased and on auscultation loss of vesicular murmur and prolonged expiration is heard. Rhonchi and crepitations are heard at the bases.

General anasarca and hepatic enlargement depend on whether congestive heart failure has occurred or not. Blood examination shows a red count of between five and ten million, the hæmoglobin being above normal and the colour-index below 1.

Radiological Examination.

1. The heart shadow is much enlarged both to the right and to the left, giving a globular appearance. 2. The enlarged pulmonary artery is seen vigorously pulsating below the aortic knuckle, which seems small by comparison. A half turn of the patient to the left (first oblique position) gives an even better idea of the size of the pulmonary artery, which may even reach aneurysmal proportions.[20] Each pulsation will be seen to follow immediately upon ventricular systole. 3. The shadows of both lung roots are abnormally large and dense and the component arteries may visibly pulsate; shadows radiating from them into the lung parenchyma may be due to vascular engorgement or to fibrosis. 4. Evidences of emphysema may be found, such as horizontal position of the clavicles and ribs, wide intercostal spaces, and low position of the diaphragm with diminished movement. An electrocardiogram will show striking right ventricular predominance.

Differential Diagnosis.

Any disease process leading to pulmonary hypertension may produce symptoms clinically indistinguishable from Ayerza's disease. Chronic disease of the lung and pleura, chronic valvular lesions of the heart, particularly mitral stenosis, congenital morbus cordis, malformations of the pulmonary artery, thoracic deformities should all be excluded before the diagnosis is suggested.

Difficulty may arise in differentiating other causes of cyanosis, especially erythræmia (Vaquez-Osler disease). Reliance must be placed on the clinical, radiographic, and electrocardiographic evidence of dilatation and hypertrophy of the right ventricle and pulmonary artery together with evidence of syphilis in those exhibiting Ayerza's syndrome. The spleen is not usually palpable and the blood pressure is normal. Blood counts may be identical in the two conditions.

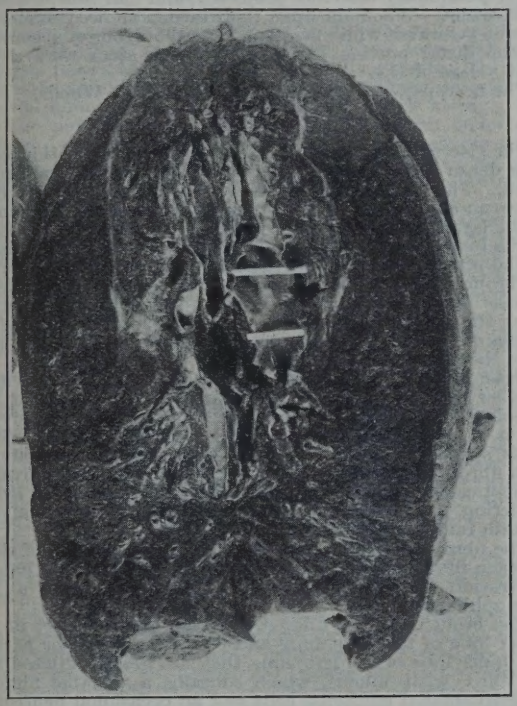
Enlarged mediastinal glands, thoracic tumours, and aortic aneurysms may, by obstructing the superior vena cava, cause congestion and cyanosis of the head and neck. The limited distribution of the cyanosis, the enlargement of the superficial collateral circulation, and radiographic examination make the diagnosis easy. Mediastinal tumours and aneurysms, however, by pressing on the pulmonary artery may cause difficulty. Congenital morbus cordis, even when unassociated with marked abnormality of the pulmonary artery, may be the cause of extreme cyanosis. It should also be borne in mind that aneurysm of the pulmonary artery may occur as a congenital abnormality; Bedford [20] reports an

example of this complicated by infective endocarditis.

Treatment.

Prophylaxis and treatment whilst the disease is in its pulmonary stage offer the best chances of success. Once cyanosis has become established little can be done apart from symptomatic treatment. Even if the Wassermann reaction is negative anti-syphilitic remedies should be given if there is a positive history or if there are signs of old visceral

FIG. 2.



Section through the left lung. The larger pulmonary arteries are greatly dilated and have thickened walls. The lower lobe is seen to extend almost as far as the apex of the lung and largely replaces the shrunken fibrotic upper lobe, which has retracted inwards. Inferiorly many dilated and thick-walled bronchioles lie closely packed together; around these a reticular fibrosis is clearly shown.

or cutaneous lesions. In the presence of persistent headache or frequently recurring hæmoptyses venesection should be employed. Oxygen administered by the intranasal method and other measures usual in cardiac failure from other causes may help.

Illustrative Case.

A.B., a male nurse, aged 45, was admitted to the London Hospital with a history of 18 months' increasing dyspnœa which was worse on exertion. Five months previously he had had two small hæmoptyses, the sputum being only tinged with blood. A month later he noticed that his lips were blue and that his feet became swollen after exercise. Cough was never a prominent symptom.

Past History.—31 years before he had had typhoid fever, and 25 years before he had had ulcers on the soft palate, which left two small perforations.

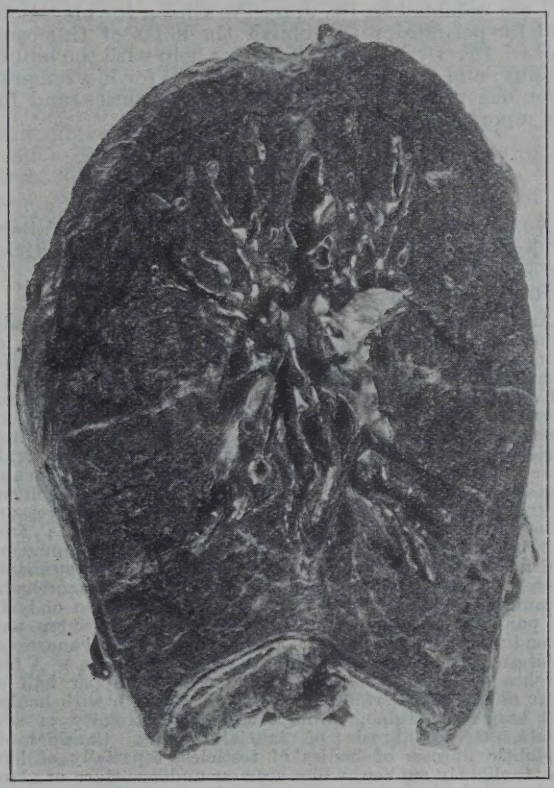
On Examination.—Cyanosis of lips, ears, cheeks, and feet. Orthopnœa present. Considerable œdema of the feet, legs, thighs, and lumbar region. Extensive tattoo marks over trunk and limbs. Moderate clubbing of the fingers, and cyanosis of the nail-beds. Two small perforations of the soft palate slightly to the left of the mid-line and close to the junction of the hard and soft palate. Small white scar on under surface of glans penis.

Circulatory System.—Pulse 100, regular, and of moderate volume. Blood pressure 120–180. Brachial and radial arteries not thickened. Apex-beat not defined, left border of cardiac dullness one inch external to the left nipple line. Heart sounds normal.

Respiratory System.—Sputum, three ounces of mucopurulent sputum daily. Chest held in position of full inspiration. Scalene muscles in action during inspiration. Inspiration everwhere harsh and expiration prolonged. Coarse crepitations at both bases, more numerous on the left side.

Abdomen slightly distended, lower border of liver palpable two fingers-breadth below the costal margin. No tenderness over the liver. Spleen and kidneys not palpable.

FIG. 3.



Section through the right lung. The dilated and thickened larger pulmonary arteries are seen in longitudinal and transverse section. A delicate reticular fibrosis is conspicuous in the greater part of both the upper and lower lobes. In the base larger fibrous trabeculæ and stellate patches of fibrosis are present in addition.

Nervous System.—Pupils equal, react to light and accommodation. Knee-jerks and ankle-jerks equal and active. Bilateral flexor plantar response.

Reports.—Urine free from albumin and sugar. Wassermann reaction *positive* in serum. Blood-urea, 0·034 per cent. White cell count, 7120. Polymorphonuclear leucocytes, 65 per cent., large hyaline cells 11·5 per cent., small lymphocytes, 20 per cent., large lymphocytes 3·5 per cent. By an oversight the total number of red blood corpuscles and the hæmoglobin value were not estimated.

Radiographic Examination (Dr. George Vilvandré).—Enlargement of the heart to the right and left, the cardiac shadow presenting a globular appearance. Left border of the heart ¾ in. external to the mid-clavicular line. Pulmonary artery unduly prominent, lying below the normal aortic knuckle (Fig. 1). Both lung roots obscured by the large cardiac shadow. General coarse mottling shown by the bases of lungs.

Electrocardiogram.—Right ventricular predominance. A negative "T" in leads II. and III. due possibly to digitalis.

Course.—Digitalis was given without benefit until coupling took place, a polygram showing alternate ventricular premature beats. Despite the administration also of diuretin, iodides, and mercury the œdema increased, and the amount of urine decreased from 60 to 8 ounces per diem. The pulse continued regular except for the above-mentioned digitalis coupling, and varied between 56 and 110 until just before death when it rose to 120. The patient died four weeks after

admission, the temperature remaining between 96 and 97° F. during the whole period.

This patient, admitted with cyanosis, severe though by no means black, with congestive heart failure, with œdema, yet with normal heart sounds, was at first regarded as a case of heart failure with normal rhythm, probably due to syphilis affecting the orifices of the coronary arteries (Wassermann reaction positive; perforated palate). The X ray appearance showing no aortic enlargement but prominence of the pulmonary artery shed doubt on the preliminary diagnosis and it was not until the necropsy that the exact nature of the underlying lesion was determined.

I am indebted to Dr. John Parkinson for his advice and for permission to publish the notes of this case, and to Dr. D. Evan Bedford for help with the bibliography, and to Prof. Hubert Turnbull for his remarks upon degeneration of the pulmonary arteries, and for his report upon the necropsy.

Report upon Pathological Findings.

By Hubert M. Turnbull.

Summary of necropsy (P.M. 446. 1928).—Failure of hypertrophied right heart. Syphilitic interstitial fibrosis of lungs and extensive endarteritis of pulmonary arteries.

Anthracosis and plasma-cell infiltration of bronchial glands. Conspicuous patchy atheroma of hypertrophied intima of pulmonary stem and of branches not affected by arteritis. Lumen of pulmonary stem, 8·5 cm. in circumference; wall, 0·1 cm. thick; lumen of ascending aorta, 7·5 cm. in circumference. Slight atheroma of arteries of greater circulation. Great hypertrophy and dilatation of right ventricle and auricle; slight atrophy of left ventricle. Foramen ovale closed. Milk spots on anterior surface of right ventricle and posterior surface of right auricle. Congestion and confluent central back-pressure atrophy of liver. Back-pressure spleen and kidneys. Great congestion of stomach; area (2·2 by 1·5 cm.) of purulent streptococcal inflammation and necrosis of centre of posterior wall of body of stomach. Area (2·5 by 1·1 by 1·3 cm.) of purulent hæmorrhagic inflammation and fat necrosis in subjacent portion of body of pancreas. Great submucous œdema of cæcum and ascending colon; œdema of bone marrow; general anasarca, greatest in feet, legs, and back; ascites (907·2 c.cm.). A few patches of fatty hæmatogenous marrow in upper half of shaft of femur. Perforation (0·4 by 0·15 cm.), with healed and scarred margins, through anterior extremity of soft palate. Great fibrosis of faucial tonsils. Considerable syphilitic fibrosis of bodies of testicles, especially of left. Faint, slightly sunken, white scar on under surface of glans penis. Colloid adenoma (0·6 cm. diam.) in lower pole of left lobe of thyroid. Thymus masked by fat. A few scars (of war wounds) on right buttock. Healed amputation of second toe of right foot. Superficial erosion of skin over buttocks. Wasted man.

Weights: Body, 64·27 kg. (length 1·72 metre); brain, 1318·3 g.; liver, 1234·0 g.; heart, 453·6 g.; kidneys, 368·7 g.; spleen, 212·6 g.; pancreas, 98·7 g.; thyroid, 20 g.; thymus, 14·2 g.; suprarenal bodies, 11·3 g.; pituitary body, 0·6 g.

Macroscopic Appearances.

The thickened parietal and visceral pleuræ were everywhere either completely fused or bound together by a net of fibrous sheets and trabeculæ. In places they could be torn apart so as to expose a visceral layer which was milky-white and either quite opaque or sufficiently translucent to show a background of dark slate. Cut surfaces of the lungs, except in the upper half of the posterior part of the left lower lobe and in the apex of the right lower lobe, had to the naked eye a conspicuously spongy appearance. A net of pearly fibrous tissue enclosed spaces, of which the larger were obviously dilated bronchioles and the smaller dilated vesicles. The fibrous septa of this sponge varied considerably in thickness in different places. Even the most delicate were clearly visible to the naked eye. Those bounding bronchioles were stouter than those bounding adjacent vesicles. Comparison of different areas showed that in general the stouter the septa were the larger were the pores. The sponge was traversed and interrupted by pearly branching trabeculæ about one millimetre broad and by pearly stellate patches about one centimetre in diameter. Some of these trabeculæ and patches could be seen to surround bronchi and large bronchioles; any bronchus or bronchiole which happened to be cut transversely in the centre of a patch was seen to be conspicuously dilated. Even in the areas mentioned above as not being spongy to the naked eye a delicate reticular fibrosis and a spongy structure were seen with a hand lens. The fibrosis was especially great throughout the left upper lobe, which was so shrunken that the lower lobe formed the apex of the left lung. It was also very great in the anterior part of both the upper and middle lobes of the right lung; here it enclosed many bronchi, which were considerably dilated and packed close to one another. In general it was greatest in the anterior and lower portions of the lobes, and there was no appearance of radiation from the hilum. The more fibrotic areas were distinctly more anthracotic than the less, and the shrunken left upper lobe was deeply anthracotic. The areas which were not spongy to the naked eye were of a rusty tinge. Very few small branches of the pulmonary artery could be recognised; most of these were unusually thick but otherwise of normal appearance, a few could be identified as solid cords of pearly-grey fibrous tissue. The larger pulmonary branches projected, and had conspicuously thick walls. When slit open their intima showed numerous opaque yellowish-white flecks and small buttons of atheroma. In the distal portion of the pulmonary stem were a few faint yellow flecks.

The necropsy was performed by Dr. W. W. Woods.

*Microscopic Examination.**

The visceral and parietal *pleuræ* are both greatly thickened by a dense collagenous fibrous tissue, and are intermittently fused. The upper part of the lower lobe of the left *lung* shows no abnormalities except emphysema, and engorgement of the larger capillaries and venules. All the other portions of the lung show a great thickening by dense fibrous tissue of the septa and of the adventitia common to the bronchi or bronchioles and their pulmonary artery. The dense fibrosis extends from the broncho-pulmonary adventitia along the adjacent walls of the alveolar passages and infundibula. Near the bronchi or bronchioles the air cavities have been completely replaced by fibrous tissue or are represented by a few small widely separated cavities. Further out the fibrotic thickening of the walls of the alveolar passages and infundibula diminishes progressively, but it is completely absent in only a very few areas. Such areas appear as islands in the fibrotic tissue. The alveoli with fibrotic walls are lined with a continuous row of oval or cubical cells. Where the fibrosis is greatest and has led to reduction in the size of the alveoli many of the alveoli contain round, desquamated epithelial cells.

The fibrotic tissue in the pleuræ and lung consists of stout collagen fibres and contains few fibrocytes; it shows patchy infiltration with lymphocytes, plasma cells, and a few eosinophil leucocytes.

The bronchioles are dilated. In the anterior part of the upper lobe of the right lung and the lower posterior part of the upper lobe of the left lung they are greatly dilated and are filled with mucus, which contains a variable number of desquamated epithelial cells and an occasional neutrophil leucocyte. Except where the air cavities have been almost completely obliterated by the interstitial fibrosis the respiratory bronchioles, alveolar passages and alveoli are conspicuously dilated; this dilatation is greater in the fibrotic areas than in the islands in which fibrosis is absent.

The number of capillaries is obviously reduced in the fibrotic alveolar walls, and is reduced in proportion to the amount of fibrosis. All capillaries throughout the fibrotic portions of the lung are greatly engorged but the engorgement is most striking in the included islands of lung tissue which are free from fibrosis. Here the walls of the alveoli are greatly widened and are moniliform in outline owing to the great distension of their engorged capillaries. There is much hæmorrhage into alveoli, and there are many small and a few large hæmorrhages into the interstitial tissue. The muscular tissue of the fibrotic portions of the lung is greatly hypertrophied. There is slight anthracosis in the site of lymphatics. Nowhere is there any infiltration with neutrophil leucocytes or any acute bronchitis or pneumonia.

In the *right main bronchus* many of the columnar epithelial cells are distended by mucus, there is a patchy infiltration of the mucosa with lymphocytes, plasma cells, and an occasional neutrophil or eosinophil leucocyte, and the mucous glands are infiltrated with plasma cells and lymphocytes.

* Portions were taken from the posterior border of the lower lobe and from near the anterior border of the upper lobe of the right lung; from the lower part of the posterior border of the upper lobe, including the adjacent part of the lower lobe, and from near the anterior border of the upper lobe of the left lung; from the right main bronchus, including a lymphatic gland; from the pulmonary stem; the right pulmonary artery; the left testicle; the body of the stomach; and the pancreas. After fixation in 4 per cent. saline formaldehyde they were embedded in paraffin; sections were stained with Ehrlich's hæmatoxylin and eosine, Weigert's iron hæmatoxylin, and van Gieson's mixture, Weigert's fuchselin and neutral red and, in some cases, Gram's stain and neutral red. Other portions were put through the Levaditi process for the demonstration of spirochætes, with a piece of congenitally syphilitic liver as control.

Few parabronchial *intrapulmonary pulmonary arteries* happen to be included in the sections. One such artery is occluded by endarteritis fibrosa; the others show considerable musculo-elastic hypertrophy of their intima. Some of the primary branches of these arteries and numerous pulmonary arteries of medium and small size are occluded by endarteritis fibrosa. The occluded lumen in some cases is narrowed, the media being crenated. The occluding tissue is sometimes composed of a reticulum of delicate collagenous fibrils and a few large spindle fibrocytes. It is sometimes sparsely infiltrated with lymphocytes and plasma cells. Usually it consists of very stout collagenous fibres and very few fibrocytes. It usually then contains delicate elastic fibrils. It is almost always canalised, and the canalising vessels usually comprise veins and capillaries as well as an artery. Sometimes, as in the case of the artery accompanying a bronchus, a large artery occupies almost the whole of the lumen of the old artery, being separated from the old media by a narrow zone of fibrous tissue containing capillaries. The canalising veins and arteries have muscular walls. Elastic fibrils are usually present in their walls; the fibrils are delicate and vary in number, but in many arteries they are as abundant as in a typical pulmonary artery. Most of the pulmonary arteries that are free from endarteritis fibrosa, especially the larger, show musculo-elastic hypertrophy of the intima. Secondary degeneration can sometimes be recognised by replacement of some of the muscle fibres by foam cells.

The *bronchial and pleural arteries* are free from endarteritis but usually show intimal hypertrophy. The pleuræ contain many wide veins. If *pulmonary veins* in the septa and pleura have been destroyed by endophlebitis their destruction has been complete, because there is now no recognisable remnant of their walls.

The intima of the *right pulmonary artery* is hypertrophied over four-fifths of the circumference, and is in places twice as thick as the media. Secondary degeneration is indicated by replacement of muscle fibres by many groups of cells which appear to be distended with fat, but paraffin sections are alone available.

The intima of the *pulmonary stem* is hypertrophied throughout the section, and in thickness has a ratio to the media which varies from 1 : 5 to 1 : 1·34. The hypertrophy is formed almost exclusively by the longitudinal musculo-elastic layer of Thoma. Many muscle fibres are replaced by foam cells.

The right *hilar lymphatic gland* is extremely engorged and the sinuses are filled with blood. There are numerous plasma cells in the lymphadenoid tissue.

In the left *testicle* there are large confluent areas of fibrosis. In these areas the tubules are obliterated by a great hyaline thickening of the fibrous layer internal to the elastic membrane, and the obliterated tubules are widely separated by dense fibrous tissue. In the centres of some areas the elastic membrane has been partially or completely destroyed. There is a slight infiltration with lymphocytes, plasma cells, and eosinophil leucocytes, particularly in the periphery of the fibrous areas. The large arteries show intimal hypertrophy; the lumina of many of the smaller arteries and veins are partially occluded by endarteritis fibrosa.

The *body of the stomach* is greatly engorged. In one section there is no other abnormality except an infiltration of the mucosa with plasma cells, which is usually confined to a narrow zone at the surface. In the section including the hæmorrhagic area there is in the submucosa a large area of œdema, dense infiltration with neutrophil leucocytes, and hæmorrhage; the walls of many veins are infiltrated and necrosed. The hæmorrhage and infiltration extend into the circular layer of the muscularis. The mucosa over the area is necrosed and at one spot its deeper layers are packed with neutrophil leucocytes. In the necrosed mucosa there are masses of Gram-positive cocci and bacilli; in the submucosa there are numerous Gram-positive cocci, diplococci, and streptococci in short chains, but only a few bacilli; some of the cocci lie within veins.

The *pancreas* shows a purulent pancreatitis with lipolysis, proteolysis, and hæmorrhage. There is infiltration and necrosis of the walls of some veins. The adipose tissue beneath the peritoneum of the lesser sac is densely infiltrated with neutrophil leucocytes. The duct of Wirsung is surrounded by infiltration and contains concretions and a few neutrophil leucocytes. A few Gram-positive diplococci were found on careful search.

Levaditi preparations.—In the sections so far examined no spironemata have been found; spironemata pallida are abundant in the control sections of syphilitic liver.

Remarks.

The necropsy showed that the essential cause of death was failure of the hypertrophied right heart. That the heart failure had been present for some time was shown by the severe "back-pressure" atrophy of the liver. The purulent streptococcal inflammation of the stomach and pancreas was obviously a subsidiary terminal event. As regards the cause of this terminal infection, the condition of the spleen appears to exclude pyæmia; the most likely explanation is a focal infection of the mucosa of the greatly engorged stomach and an infection of the subjacent pancreas by direct spread; the juxtaposition of the inflammation in the stomach and pancreas brings strong evidence in favour of this view.

The hypertrophy of the right heart, the failure of the heart, and the cyanosis observed during life are adequately explained by the condition in the lungs. First, there was a great loss of alveolar surface. Many alveoli had been completely destroyed by the interstitial fibrosis. Where the fibrosis was less the alveoli were greatly distended. The distension of these alveoli and the bronchiectasis were doubtless due to retraction of the peribronchial and peribronchiolitic fibrotic tissue. Such alveoli as were not fibrotic were distended to a less degree, those which lay as small islands in the fibrotic portions of lung being more distended than those which were not in close relation to fibrosis (the section of the upper part of the lower lobe of the left lung); but the lung in the latter position showed typical vesicular emphysema. Secondly, there was a great loss of capillaries in the walls of the fibrotic alveoli. Finally, most of the pulmonary arteries of medium and small size, and some of the large, parabronchial, were occluded by canalised endarteritis obliterans. These changes could not fail to cause great obstruction to the lesser circulation. Direct evidence of the obstruction caused by the reduction of the capillary area was shown by the intense engorgement of the remaining capillaries and by the intra-alveolar and interstitial hæmorrhages.

The inflammation in the lung had been of long duration. This was shown by the stoutness of the collagen fibres and the paucity of fibrocytes in the fibrotic pleura and pulmonary interstitial tissue, by the presence of elastic fibrils in the inflammatory tissue occluding the arteries, and by the formation of vessels with muscular and elastic coats within this tissue. But the inflammation was still active: patches of infiltration with lymphocytes, plasma cells, and eosinophil leucocytes lie in the pleura and in the interstitial tissue of the lung; the lumen of some pulmonary arteries is occupied by young granulation tissue.

Although no *S. pallida* have yet been found there can be no doubt in view of the histology that the inflammation of the lung, pleura, and pulmonary arteries was, like the inflammation of the testicles, syphilitic. If confirmation were required it can be found in the positive Wassermann reaction, the perforation of the palate, the fibrosis of the tonsils, and the scar on the penis, which at least suggests venereal infection. The syphilitic inflammation of the lung is entirely interstitial; there is no trace in the sections of bronchiolitis obliterans or of intra-alveolar organisation. Further, there is no evidence of its having spread fan-wise from the hilum into the lung.

In most of the pulmonary arteries in the lung that were free from inflammatory endarteritis, in the right primary branch of the pulmonary stem, and in the pulmonary stem itself there was intimal hypertrophy; and the hypertrophied intima was the seat of considerable atheroma. Such intimal hypertrophy and secondary degeneration occur in all cases of obstruction to the flow of blood in the lesser circulation, for instance in mitral stenosis; and they have been in my experience proportional to the estimated degree of obstruction.

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THE RESISTANCE TO MALIGNANT GROWTH.

By TREVOR HEATON, D.M. Oxf.,
STUDENT OF CHRIST CHURCH, OXFORD.

In the following paper a brief résumé is given of the results of seven years' work, of which a full account has been already published elsewhere.[1]

The experiments were prompted in the first instance by a doubt whether the cancer cell differs in any essential respect from cells of the normal body. The extreme diversity of cancer, it seemed, is difficult to reconcile with the idea of a specific nature or common causation; and the gradation of its different types from innocent tumours to malignant disease of the most virulent kind points to a perfectly regular descent from one to the other. The histological classification of tumours is notoriously artificial: their propensity when malignant to invade adjacent tissues, to form metastases, or to survive transplantation may be very pronounced and quite distinct as a general rule, but on the other hand is sometimes only feebly developed or even altogether absent; it is scarcely possible to look upon any of these properties singly as absolutely characteristic or fundamental, and the combination of them all is probably rather exceptional. The boundaries between tumour tissue and normal cells are almost as indefinite as those between one tumour and another: three well-known illustrations of this are the dermoid cyst, an evident anomaly of development; the chorion, passing occasionally into chorion-epithelioma; and embryomata, or the tumours which arise from the introduction of embryonic fragments into the tissues of an adult host. The course of evolution rarely leaves behind it so complete a chain of "missing links" between the various products of its operations. Finally, the application of a series of tar products of varying potency may induce hyperplasia, or papilloma, or cancer, or all of these in succession; and the cancer when it develops may or may not prove to be transplantable.

The growth of cancer was for these reasons regarded as of fundamentally the same nature as growth of any other kind, however magnified and distorted and nearly unrecognisable the growth-picture may become. In this connexion the word "growth" is itself ambiguous; for the growth of a tissue must be differentiated from the growth, or condition of multiplication, of its constituent cells. The growth of a cell-population is not merely a question of birth-rate; it is a preponderance of births over deaths. In the normal adult body there is, as a rule, no such preponderance, and therefore no growth; but this is not because there is no cell-multiplication, but because there is an equally high cell-mortality. Even in old age the cells of many tissues continue to multiply rapidly; and the characteristic feature of a tumour is not that its cells multiply, but that their multiplication leads to uncontrolled growth. In the genesis of cancer, therefore, it seemed to be idle to consider only the cancer cell; and necessary first to ascertain the normal method of growth control. For if the transitional stages in tumour malignancy reflect different degrees of failure in the control process, they indicate also that the method of control is seldom if ever completely ineffective. Moreover, if the process of physiological control were understood, it might also be reinforced; and the prevention or even the arrest of malignant disease might in fact be accomplished, not by pharmacological methods in the narrow sense, nor by the methods of bacteriological immunisation, but by the physiological method at work in the normal body for the prevention of excessive growth, of which cancer itself is only an extreme and perverted form.

[1] Heaton, T. B.: Jour. Path. and Bact., 1929, xxxii., 565; See THE LANCET, August 17th, p. 342.

The Control of Normal Growth.

Leaving aside for the moment, therefore, all question of tumours, the conditions first to be reviewed are those which prevail in the normal body.

Tissues which fail to increase, though their cells proliferate, must clearly be subject to some form of restraint, and the process has been described as "tissue tension." It is a description, not an explanation, and implies only that tissues in contact with one another maintain a certain equilibrium, in spite of tendencies to expand which any of them may display. But the manner of this resistance to expansion would not seem to be in doubt, though the blood-cells and blood-forming organs are obviously exceptional, and require control of an exceptional kind. Apart from these, any tissue whose cells are constantly multiplying will expand, like other living colonies, to the limit of the available food-supply, and tissue tension must involve the restriction of this supply. The needs of different tissues in this respect no doubt vary greatly, and include nutrition, oxygen, mechanical support, and the removal of waste products; but so long as these services, comprised under the name of "stroma," are stationary, all tissues dependent thereon must be stationary also. It is therefore striking that most of the tissues whose cells continue to multiply throughout life are epithelia, while the vascular connective tissues are normally static and passive. If growth never occurred the process of tissue tension might be thought to consist simply in this passivity, imposing a limit on epithelial proliferation and differing in various localities only in the pattern of the various supporting and proliferative tissues.

Actually growth is always taking place; almost every organ is capable of hypertrophy and of renewal of activity for the repair of injury. In the skin, for example, the multiplication of epidermal cells is normally limited to the replacement of wear and tear, any increase being prevented by the unyielding character of the underlying stroma; but sometimes true growth occurs, as when hairs are developed at puberty or, as in many animals, with the recurrence of the seasons. In such cases the hair follicles increase in size, in response to the stimulus of a hormone; and this involves growth not only in the specific epithelium, but also in the connective tissue which supports it. The hormone acts directly upon the epithelium, but this in turn induces a reactive increase of stroma. The passivity of stroma, therefore, is only relative; it is overcome whenever the growth tendency of the epithelium receives additional impetus. Similar reactivation of static connective tissue is seen on a large scale in the process of granulation, and in both cases passivity is resumed as soon as the special conditions cease to exist.

An accurate balance, therefore, preserves the passive status of connective tissue stroma, and on this equilibrium tissue tension would seem to depend. The stimulus of epithelial activity tends constantly to upset the equilibrium, but is only in special circum-

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stances sufficient to do so. There must be some agency to counteract it; it cannot be counteracted merely by the inherent inertia of connective tissue. For connective tissue has, in fact, no such inherent inertia at all; when cultured in vitro its cells continue to proliferate indefinitely, and indeed with greater robustness than any other type of cell. The influence which antagonises the stimulant action of epithelia is therefore external; and on the analogy of the numerous growth-promoting factors which are known, both hormones and vitamins, is likely to have a chemical character. It is likely, in fact, to be a hormone or a vitamin itself, the equilibrium of tissue tension being of the common physiological type, between this factor which tends to arrest growth and antagonistic factors tending to promote it; now one predominates, now the other. Furthermore, the growth-promoting influences are multiple, for the epithelia upon which they act are very diverse; but the inhibiting influence which acts upon a single tissue, the stroma, is not unlikely to be single.

A Growth-inhibiting Factor.

Various organs were therefore tested in the hope of obtaining an extract with the property of stabilising connective tissue. The method employed was that of tissue culture, the extracts being added to a nutrient medium in which connective tissue cells (fibroblasts) were implanted; implants of epithelia (from the intestine) were made at the same time as a control, to ensure the general fitness of the medium for cell growth. Nor was the search long or difficult. The extracts were made in 75 per cent. alcohol, evaporated down, taken up in water and sterilised, being freed thereby from proteins and growth-promoting factors which all tissues, of course, contain; and the action in question was shown by all the tissues examined in approximately the same degree, extracts of the liver being perhaps rather more active than those of other organs. In the plain medium, that is to say, fibroblasts and epithelial cells grew equally well; but the addition of extract of any tissue prevented the growth of the fibroblasts without interfering with that of epithelia.

The widespread distribution in tissues of a substance which inhibits growth was not unexpected; but it seemed to point to derivation from the diet rather than to a synthetic origin in the body, and yeast, among other foodstuffs, was tested for its presence. Brewers' yeast was found to contain it, but not bakers' yeast, and a likely source was thus indicated in malt, upon which brewers' yeast is grown. After long use of an extract obtained from yeast, malt was accordingly substituted, and seemed to be preferable, yielding very readily a crude but active extract of fairly constant composition.

Effect on Normal Growth.

An extract being now available with the desired action upon connective tissue cells in vitro, the next step was to apply it in vivo. The suggestion was that this substance inhibits the proliferation of fibroblasts in the body and determines, by its eventual predominance, the cessation of the growth period. If this were so, it seemed that by administration of the extract to young animals the growth-promoting factors might be prematurely counteracted and normal growth cut short. It was administered by addition to the water in the case of aquatic animals, and by intraperitoneal injection to mammals. The effect was noted on the metamorphosis of tadpoles, on the regeneration of amputated parts in newts, on the growth of young rats, guinea-pigs, and rabbits, and on the course of pregnancy in guinea-pigs. The result in every case was the same: with small doses growth was delayed, with larger doses it was completely and immediately arrested; and when the treatment was omitted growth was resumed.

Objection might be made that the effect of injecting a crude extract would be gross poisoning, and arrest of growth from mere interference with appetite and general well-being. Indeed the objection would not be unreasonable, for the doses given were but little less than lethal. It was noticed, however, that the younger the animals the less easily were they affected. The relative dose for a small rat or guinea-pig was three times as large as that required for a half-grown animal; and a curve was obtained in the case of guinea-pigs showing a definite inverse ratio between body-weight and the dose per kilo necessary to arrest growth. So marked a discrepancy, it seemed, would scarcely be consistent with a merely toxic effect; but was only to be expected if the action were specifically upon the growth process, for the energy of growth is at its greatest in young animals. Furthermore, the dose necessary to arrest growth was found to be considerably larger than was sufficient to prevent its resumption, and the dose necessary to arrest the course of pregnancy considerably larger than would be tolerated by non-pregnant animals.

Effect upon Tumours.

The normal function of this factor, it is suggested, consists in preserving the balance of physiological growth, and as such may have some general physiological interest in relation to problems of growth and diet. But its effect when given in excess would seem to be applicable also to the case of growing tumours. For as seasonal or other normal growth is induced by hormones, the growth of tumours is induced by epithelial stimulation in other ways, as by certain irritants; and the effect in either case is to overcome the resistance to expansion of the underlying stroma. If by giving the inhibiting extract in excess this resistance can be raised sufficiently to prevent physiological growth, there would seem to be no reason why the growth of tumours whose demand for stroma is precisely the same should not be resisted in the same way.

Whether the inhibiting extract will be found in fact to have any prophylactic or curative value as applied to human cancer has yet to be determined, and experiments to that end are in progress. Hitherto trial has been made only with transplantable tumours in rats—namely, the Jensen rat sarcoma, and, in a few cases, the rat carcinoma No. 9—and the extract has necessarily been given by intraperitoneal injection. The results were striking enough, tumour growth in several hundred animals being brought very rapidly to a standstill; but the necessary dose was large, since only young rats were used, and after the growth of their tumours had been arrested the animals usually died. The difficulty was thought to be only technical, for in a number of rats which could be induced to take the extract by the mouth complete retrogression of the tumours was obtained. The following facts, moreover, seemed to be of importance: (1) the appearance of the tumours after arrest of growth was one of intense venous congestion, as has been found also after their arrest by radium or the application of heat; (2) whatever the size of the animal the dose necessary to arrest tumour growth was the same as that necessary to arrest its body growth, and in full-grown animals would therefore be comparatively small; (3) an effect on tumours was only obtained with extracts which proved on tissue cultures to exhibit the specific property described, of preventing the growth of fibroblasts.

The Jensen rat sarcoma is no less malignant than the majority of spontaneous tumours; and the experiments therefore suggest that the differences between malignant and normal cells are less important than their fundamental resemblance. A tumour, like any other growing focus, needs a growing vascular environment; it is on this environment that the control of normal growth is exerted, and it is here that resistance may be offered also to the growth of cancer. The inhibiting factor seems to provide a possible agent for making this resistance effective.

Corrigendum.—In Dr. E. Fränkel's article on the Blastogenic Principle in Fowl Sarcoma, THE LANCET, Sept. 14th, p. 539, col. 2, line 50, for "six attempts out of ten" read "out of *twenty-one*."

THE USE OF INSULIN IN THE TREATMENT OF PERNICIOUS ANÆMIA.

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THE importance of liver in the process of blood-regeneration was first pointed out, independently, by Whipple and Robscheit-Robbins, and by Jeney. Whipple and his collaborator were the first to report good results from feeding dogs, made anæmic by repeated bleeding, with fresh liver, while the favourable results of protein-free liver extract were first published in a Hungarian medical journal by Jeney in a communication from the Jobling Institute for Pathology, Columbia University, where he carried out his researches in 1923–24. The paper[1] by Whipple and Robscheit-Robbins was published in May, 1925, and Jeney's work appeared in the spring of the same year.[2] Minot and Murphy in 1926 introduced their successful liver diet, which has since become famous, for pernicious anæmia, but Whipple and his collaborator adopted liver extracts only in 1927. Jeney's researches, performed in 1923–24, partly in collaboration with Prof. Jobling, were therefore the first in connexion with a protein-free liver extract. Accounts of them were published in America in 1927.[3 4] I have emphasised these facts because Jeney's right of priority is in question, and his name is not mentioned in the most important papers and works on the subject. Mouzon[5] alone mentions the experiments of Jeney and Jobling with alcoholic liver extract.

Liver and Insulin.

Of the very numerous proposals for treating pernicious anæmia that represented by Minot and Murphy seems to be the most noteworthy. According to these investigators, liver supplies the materials necessary for building up the cytoplasm of the blood corpuscles and at the same time has a stimulating influence on the bone-marrow, acting in so specific a manner that they consider that any anæmia in which a liver diet is ineffective may be excluded from the class of pernicious anæmia. That liver actually contains substances which promote the formation of red blood corpuscles—in the form of building substances or specific stimulants—is proved by the researches of Jeney and Jobling and by Robscheit-Robbins and Whipple's experiments on animals. Jeney's[6] work shows that the substances promoting blood formation are to be sought in the decomposition products of red blood corpuscles developed in the liver.

It is only natural that the treatment of pernicious anæmia should depend on a series of factors, such as the state at which the patient is received for treatment, his individuality, his reactivity, the regenerative power of the bone-marrow, the duration of the malady and the number of relapses, and this fact must not be disregarded. It explains the relative failures frequently obtained alongside favourable results.

During the past two years we have had a strikingly large number of cases of pernicious anæmia in comparison with former years. Since the essential of treatment must lie in assisting the blood-forming organs and in strengthening the whole body, we thought it advisable to employ a remedy intended to combat the well-known loss of appetite in pernicious anæmia, and for this purpose tried insulin, which we had previously been using in all cases of anorexia. The anorexia and cachexia of our patients made it impossible to begin a liver diet at once, but we hoped to be able to improve their appetite so that they could take it.

In a comparatively short time we had eight patients for treatment. Their treatment and its effects is shown in the Table.

Case 1 was treated with insulin alone (60 units daily) and the number of the red blood corpuscles rose within a month from 770,000 to nearly four millions, the appetite being meanwhile excellent, while the hæmoglobin content also assumed more normal figures. Cases 2, 3, and 4, which were placed on insulin and arsenic treatment, showed results in no

No.	Age in years.	Period of treatment.	Values at the beginning and at the end of treatment.			Daily increase.	
			Hb %	Blood count in millions.	Colour-index.	Hb.	Blood count.
1	36	Feb. 10 to Mar. 17.	15–60	0·77–3·8	1·0 –0·78	1·2	84,400
2	30	Apl. 20 to May 26	28–78	1·14–2·9	1·11–1·21	1·4	48,000
3	55	Feb. 6 to Mar. 17.	35–70	1·4 –3·2	1·13–0·98	0·87	45,000
4	55	Mar. 27 to June 5.	48–70	1·36–2·56	1·55–1·23	0·3	16,901
5	41	July 27 to Oct. 1.	22–65	0·85–4·5	1·23–0·65	0·59	50,695
6	66	Apl. 16 to June 5.	36–82	1·8 –3·9	1·00–1·05	0·92	42,000
7	36	Dec. 1 to Mar. 13.	37–80	1·8 –4·9	0·70–0·80	0·6	41,346
8	36	Jan. 5 to Mar. 21.	21–75	0·73–4·4	1·02–0·76	0·71	45,655

Treatment.—(1) 2100 units insulin; (2) 540 units insulin and strychnotonin; (3) 3060 units insulin, and arsenic; (4) 2200 units insulin, and natrarsen; (5) 690 units insulin, 4600 g. liver; (6) 2220 units insulin, 100 g. perhepar; (7) 4050 units insulin, 2100 g. hepatopson; (8) 1950 units insulin and 3000 g. hepatopson.

way better than Case 1. The rise in the blood count was somewhat gradual, the hæmoglobin values showing rather greater improvement. Case 5 is interesting. During the first 24 days of treatment the patient received 30 units of insulin daily and 1 c.cm. of strychnotonin (a preparation containing arsenic). During this period the red blood cells rose from 850,000 to 1,400,000, and the hæmoglobin percentage from 22 to 28. The patient was then put on a diet including 100 g. of cooked calf's liver daily, with the result shown in the table. Case 6 received 60 units of insulin daily from the first to the 37th day, and 2·5 g. of Richter's perhepar (a liver extract) from the 10th to the 50th day. During the first ten days, with insulin alone, there was no increase in the blood count and hæmoglobin values, though the general condition and appetite were excellent. When liver treatment was started they immediately began to rise, and after a month the patient was discharged in very good health. Case 7 at first responded well to insulin and arsenic treatment, but after a month's progress the red cells and hæmoglobin became stationary. From the 80th day onwards the insulin was stopped and the patient was given 100 g. of Schottmüller's hepatopson daily. It was very striking to note that the number of the red corpuscles increased by 1·5 million during the ensuing 20 days, while the hæmoglobin value declined. In Case 8, owing to the grave condition of the patient, both insulin and liver extract were given from the beginning (insulin 50 units and a spoonful of hepatopson). Both forms of treatment were discontinued within 42 days, but in two months the number of the red corpuscles rose to over five million, although the patient was in a dying state when admitted.

The subjective condition improves in a very short time in response to insulin by itself, as well as to the insulin-liver and insulin-arsenic treatments. After taking insulin bulimia sets in, and the vertigo, buzzing in the ears, and general debility disappear; the condition of the patients visibly improves, and the number of red corpuscles and the hæmoglobin content increase (by 30,000–40,000 and 5·10 per cent. respectively per day). The headaches disappear last, but these, together with serious anæmia, are correlated

with the gastro-intestinal disorders, which, as a rule, remain to the end and which are often strongly marked. The constant anorexia can be transformed into bulimia in three or four days by insulin, so that patients want to eat continuously. Return of healthier colour may be looked for on the tenth day; this and the redness of the lips is increasingly pronounced. As the blood count and hæmoglobin values rise there is a fall in the colour-index, and a disappearance of hyperchromatosis, together with a decrease of anisocytosis, megalocytosis, and poikilocytosis, and disappearance of polychromatophilia and normoblastosis. The only symptom which remains to the end, and which it is impossible to influence in any way, is achlorhydria.

I began the insulin treatment with 20–30 units (twice daily), increasing with the improvement in appetite to 40 units, always half an hour before meals. With the use of Richter's insulin there are practically no disagreeable symptoms, such as hyperæmia, œdema, and pains. Large doses, however, entirely destroy the appetite, while there is also the danger of hypoglycæmia. It should be noted that in general the insulin treatment has always an optimal limit. In Case 8 we discontinued the liver diet, mainly because the hepatopson was very trying to the patient, owing to its bulk and unpleasant smell. Later we had recourse to Richter's perhepar, a remedy containing a large quantity of liver substance in quite a small compass (1 g. equivalent to 100 g. of liver), so that the daily dose of 250–300 g. of liver can be administered in the form of a few grammes in wafers without any difficulty. It is now obtainable also in tablet form.

Results of Other Workers.

I thought the publication of these results with insulin would not be without interest, if only because Walinski[7] has hitherto been the sole investigator who has reported satisfactory results from a combined insulin and arsenic treatment with blood transfusion, though Weil[8] has also had a certain degree of success with the same combination. He, however, gave only 5–10 units of insulin. Rathery[9] has reported unfavourable results, and Neuburger,[10] who made unsuccessful experiments in 1924, rejects insulin treatment not merely because the patients are apprehensive of its unpleasant effects, but also because he found that in every case there was pronounced deterioration. According to Imchanitzky, the number of red corpuscles decreases with insulin. Lévai[11] also mentions experiments by Jaksch-Wartenhorst, according to which the use of insulin in pernicious anæmia causes a deterioration in the condition. Varga[12] alone reports the case of a man of 76 in which insulin and arsenic treatment gave good results.

When it is considered that many authorities regard the cause of pernicious anæmia as being a displacement of the blood reaction in the direction of acidosis, which facilitates hæmolysis, and that insulin, on the other hand, increases the alkalinity of the blood (Walinski), the soundness of the insulin treatment appears to be further confirmed.

In a case like No. 8 the use of insulin is of vital importance. On his admission the patient was unconscious, the number of red blood corpuscles being 700,000. Every attempt to feed him failed. After an insulin injection, however, he even took hepatopson, although he fell asleep while being fed. On the third day he began to have a keen appetite, his complexion soon became more healthy, and in a fortnight he was able to leave his bed for a few minutes.

Whilst a liver diet must be regarded as the standard remedy for pernicious anæmia, insulin may be looked on as an indispensable auxiliary.

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(*Continued at foot of next column.*)

Clinical and Laboratory Notes.

LOA LOA INFECTIONS.

A CASE WITH RAPID ONSET OF SYMPTOMS.

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ATTENTION has often been drawn by Low, Manson-Bahr, and others to the longevity of *L. loa*, and to the lengthy period which may elapse before either symptoms or infection of the blood by filarial embryos becomes manifest. This period may amount to four or more years, and worms have been removed from beneath the conjunctiva of persons who have been outside an infective area for 12 and even 15 years.

On the other hand, little attention has been paid to the minimum period which must necessarily elapse between the bite of the infected chrysops and the moment when the first symptoms appear. The principal symptom, apart from pain and discomfort in the eye when a mature worm happens to pass across it beneath the conjunctiva, are certain rather odd enlargements known as Calabar swellings which most commonly affect the forearms and wrists but also occur in the legs, trunk, and face, and even under the scalp. In an endemic area their appearance is so characteristic as to make the diagnosis comparatively simple in almost every case. Often they arise in a night, giving a bloated, œdematous appearance to the affected part. While objectively they exhibit many of the signs of an acute inflammatory condition, the subjective sensations are relatively trivial, and in a large proportion of cases there is no actual pain or tenderness, but merely stiffness with a feeling of weakness. They never lead to suppuration, and as a rule they disappear as mysteriously as they arise in 50 to 70 hours.

We are at present very far from knowing their true pathology. Manson, who described the worm in 1891, believed that they might be caused by the emission of myriads of larvæ by the pregnant female lying in the connective tissue. Others have suggested as a cause the death of the mature worm and the setting free of unknown toxins. It is proposed to show that in the light of the case given below both these theories are untenable.

Filaria loa is manifestly long-lived and, according to Manson-Bahr, development of the larva in the human body is so slow that full maturity is not reached for several years. In support of this statement he points to the well-established fact that the offspring of the worm may not appear in the blood as microfilariæ for seven years, while the adult parasite itself may not appear for four or more years. Further, infected children rarely show embryos in the blood though immature worms may be found in the tissues. These facts would lead one to expect a period of several years at least to elapse between the date of infection and the appearance of Calabar swellings if the latter are caused by mature or parturient filariæ.

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The following case is cited to show that the classical symptoms of loasis may appear long before the larvæ can have reached maturity, and certainly before reproduction could have occurred. The case is interesting, not because it is uncommon, but because the dates are so unusually definite (thanks to the patient's diary), and the symptoms have been observed at intervals by the writer for over nine months.

A. B., aged 23, paid his first visit to the tropics in 1928, landing at Port Harcourt on May 2nd. He arrived at Ikom on May 18th, which was the first place in which he might have encountered a chrysops. But though already well aware of the little red fly, he has no recollection of having been bitten by it until the first week in June. The earliest possible date of infection, therefore, is May 18th, but the most probable date is July 10th, when he was severely attacked by chrysops at a village in the dense bush.

On July 17th—that is, one week after the most probable infective date and 61 days after the earliest conceivable date of infection—he noticed his right knee was stiff and swollen, and on this subsiding the left arm showed a swelling in the middle of the forearm. As soon as that had disappeared a swelling of the same kind appeared in the left leg. Such swellings have appeared at short intervals ever since and never has the interval extended to a month.

On August 31st he had to wear his arm in a sling owing to the pain in the swollen forearm, which subsided painlessly next day. A few days previously the fingers, wrists, and thigh had been affected.

In April, 1929, the right wrist was swollen, and for the first time there was a sensation of something moving near the knuckle of the ring finger which was swollen and stiff, and the patient said it felt as though the skin over it would burst. Though usually the swellings had been painless, this one was definitely painful, and owing to the swelling the ring finger could not be flexed, and while writing was difficult, golf was impossible. A note made at the end of April recalls the fact that this was the 19th day of a swelling which, starting in the left wrist, crossed quite abruptly to the right about six days before, whence it spread to the ring finger. There was, as usual, no œdema, but the swelling was hot and quite definitely painful.

On May 25th the patient complained that a swelling beneath the scalp had given him a headache. This swelling appeared over the right parietal bone on the 23rd, disappeared on the 24th, and reappeared over the left parietal on the 25th. At a final examination on June 5th the left ring finger was still slightly stiff. No worm had appeared under the skin or conjunctiva, and apart from an eosinophilia the blood picture was normal.

We are still very far from a solution of this curious phenomenon.

ENLARGEMENT OF THE LEFT AURICLE OF THE HEART.

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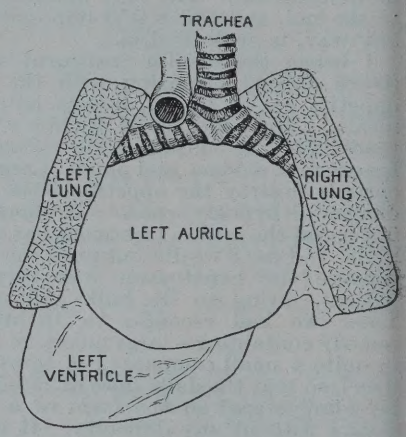
Enlargement of the left auricle of the heart was recognised and described by early medical writers. The association of left auricular enlargement with mitral stenosis was appreciated in the writings of Corvisart and Laënnec, and nowadays the radioscopic demonstration of left auricular enlargement is considered an important sign in the recognition of mitral stenosis. Various complications may arise from distortion of the upper mediastinum as the result of enlargement of the left auricle. Compression and displacement of the œsophagus, paralysis of the left recurrent laryngeal nerve, and compression of the left bronchus have been described by various authors. The case which we report is one in which the left main bronchus was compressed by the enlarged left auricle, and collapse of the left lung resulted. Bronchial compression by an enlarged left auricle has been known for nearly a century. The first report "on the morbid flattening or compression of the left bronchus produced by dilatation of the left auricle" is by J. W. King in the *Guy's Hospital Reports* of 1838. Four cases were described; three of them at autopsy showed definite evidence of mitral stenosis and the fourth was thought to be a case of congenital heart disease. In 1867 Friedereich reported the case of a girl with marked mitral stenosis in which the clinical diagnosis of compression of the left main bronchus had been made in 1850, and confirmed at autopsy four years later. Taylor, Sansom, and many other writers refer to the condition in association with mitral stenosis. Stoerk,[1] in 1910, in a study of the anatomical relations of the mediastinal contents, demonstrated that the left auricle made up the posterior and superior parts of the heart, and that the main bronchi were in close relation just above it and that the left main bronchus normally rested on the upper surface for a short distance (see Fig. 1). In 1901 Owen and Fenton first described extreme enlargement of the left auricle to the right. Shaw, Bramwell, East, and Lutenbacher have described further cases, and recently Bedford[2] has described two cases in great detail and given a complete review of the literature. Last year Murray Steele[3] reviewed the literature and gave a clinical description of a case suggesting bronchial pressure due to an enlarged left auricle.

FIG. 1.



Dorsal view of the heart showing widening of the bifurcation of the trachea by large left auricle. (After Stoerk.)

Résumé of Case Notes.

The patient was admitted to St. Mary Abbots on April 27th, 1929, as a case of active rheumatic carditis. For three or four months she had had vague transient pains in the arms and legs, and a cough but no sputum. She was losing weight. For two months she had kept in bed at home with persistent tachycardia. She was a pale, "toxic," wasted child, with a temperature of 99° F. There was no gross congestive failure. Exercise tolerance was very poor, the heart was enlarged, the apex beat heaving, mobile, and outside the nipple line in the left sixth space; the pulse-rate was 100 per minute. The heart beat was regular with frequent extrasystoles, a diastolic thrill at the apex, full diastolic bruit, accentuated first sound, systolic bruit and modified second sound. At the base the pulmonary second sound was slightly accentuated but no bruits were heard. The lungs were clear, and the liver and spleen were not palpable. On May 7th the apical rate was 160 and regular, and showed no alteration with change of posture or after moderate exercise. The lungs were clear. On May 9th there was slight pyrexia and frequent extrasystoles, but the tachycardiac condition remained unchanged until May 29th, when a definite area of bronchial breathing was found in the left scapular region, the extreme base being clear. There were no added sounds, but whispering pectoriloquy was heard over this area. Movement of the left chest was fair. The temperature showed an occasional spike of 100°.

Radiography (Fig. 1) showed a large heart of "mitral-stenotic" shape and lungs clear except for doubtful increased density in the middle of the left lung area.

A tentative diagnosis was made of collapse of the left lower lobe, or possibly broncho-pneumonia.

On June 5th the area of bronchial breathing in the left lung had markedly increased, extending practically to the disease of the lung. The circumference of the left chest was less than that of the right and movement was impaired. There was very little yellow sputum. The temperature went up to 100°. The heart-rate was 120, regular. No pupil

[1] Stoerk, O.: Zeit. f. Klin. Med., 1910, lxix., 32.
[2] Bedford, D. E.: American Heart Journal, 1927, iii., 127.
[3] Steele, J. Murray: Ibid., 1928, iv., 53.

changes and no difficulty in swallowing were noted. On aspiration of the left chest 5 c.cm. of clear fluid were obtained. This contained a large amount of albumin, erythrocytes, and occasional polymorphonuclear and some mononuclear cells, but no tubercle bacilli. Cultures were sterile, as was also the blood culture. The sputum contained no tubercle bacilli or streptococci and little pus. A blood count showed 5,744,000 red cells and 6148 white cells made up of: polymorphonuclear cells 70 per cent., lymphocytes 22 per cent., and large mononuclears 8 per cent. The colour-index was 0·7 and the hæmoglobin 80 per cent.

A diagnosis of collapse of the lower lobe of the left lung was made.

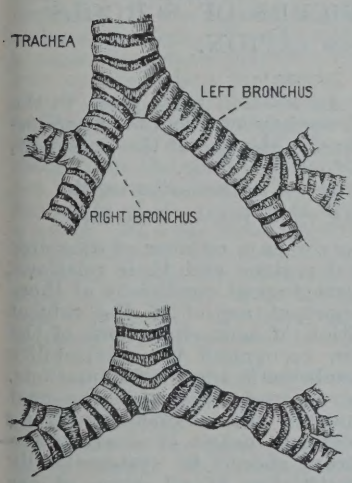
On June 18th the signs were as before and included a few coarse crepitations at the base of the left lung. Later signs of gross congestive failure appeared. Digitalis and leeches were ordered, but on July 9th the patient died.

Autopsy by Dr. KEITH.

The general development was normal for the age. There were a few recent pleural adhesions on both sides, and some small patches of partly organised lymph. The right lung was intensely œdematous and congested, and showed a recent infarct at the apex of the right lower lobe, covered by a patch of pleurisy. The changes in the lung were recent and did not suggest a broncho-pneumonia. The lower lobe of the left lung was collapsed; not to that extreme degree seen in pneumothorax, but it was completely airless and no fluid could be expressed from it. The upper lobe was very slightly congested. The aorta and œsophagus appeared normal and healthy. The trachea contained much mucus but was otherwise healthy. On opening the posterior surface of the left bronchus a large blood-clot was found. This proved to be the contents of the left auricle, which was very greatly enlarged and had come into relation with the posterior surface of the left bronchus. Further examination of the left bronchus showed that there was—at about ¼ inch beyond the original bifurcation of the bronchus—a definite kinking, the kink being at the point where the left auricle had been pierced while opening the bronchus. There was evidence of a considerable degree of obstruction at that point, although the removal of the organs from the body had partly reduced it. The right bronchus was normal.

The heart was greatly enlarged and weighed 15 oz. In situ there was marked enlargement to the left, fullness in the pulmonary area, and slight enlargement to the right. The pericardium contained half a teacupful of fluid. There was a patch of pericarditis over the apex, which was united to a corresponding patch on the parietal pericardium by a thin fibre ¾ inch long. The right auricle was slightly enlarged. The left auricle was very markedly enlarged upwards and to the left, and contained a large clot of blood. The exact size could not be made out. The right ventricle was slightly enlarged. The left ventricle was markedly enlarged and its walls much thickened. No gross valvular disease was present. The mitral valve was widened. In the fresh specimen three fingers and in the hardened specimen two fingers could be passed through the mitral orifice with ease. The mitral valve was thicker than normal and showed some roughening at its edge. The chordæ tendinii were definitely shortened and thickened. The aortic, tricuspid, and pulmonary valves appeared competent and normal in structure. There was some free fluid in the abdomen, and the liver and spleen showed evidence of congestive failure.

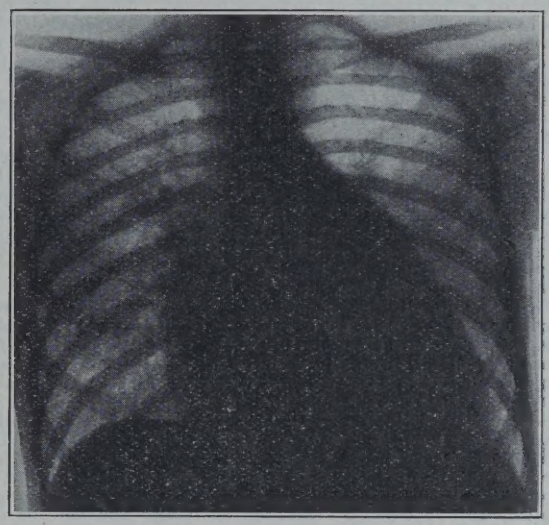
FIG. 2.



Anterior view of trachea and bronchi. Above: normal condition. Below: widening of interbronchial angle.

The clinical picture was one of active rheumatic carditis. The clinical signs of persistent tachycardia, frequent extrasystoles, and at one time a continued ventricular rate of 160 per minute, unaffected by exercise or change of posture and possibly constituting evidence of auricular flutter, suggested particular involvement of the auricular musculature in the disease process. The physical signs were those typical of mitral stenosis, especially the localised apex-beat, the diastolic thrill, and the full diastolic and systolic bruits. The terminal signs denoted left ventricular failure. The radioscopic appearance in the antero-posterior view was that of mitral stenosis. Unfortunately with the technical facilities at our disposal an oblique view could not be taken.

FIG. 3.



Radiogram showing enlargement of the left auricle.

At autopsy the picture was that of rheumatic carditis; a large heart with a wide but thickened mitral orifice, showing no evidence of mitral stenosis, and a very large left auricle. This is an association which I have never seen and to which there is no reference in the literature. A large left auricle is invariably described in association with mitral stenosis, and is exemplified by the cases described by various clinicians. The radiological appearance of "mitral stenosis" was shown although at autopsy stenosis of the mitral valve was not present. Collapse of the lower lobe of the left lung due to constriction of the bronchus by the pressure of a large left auricle—as in this case—is rare.

Our thanks are due to Dr. Remington Hobbs for permission to publish this case.

THE MENTAL FACTOR IN BRONCHIAL ASTHMA.

REPORT ON TWO CASES.

BY M. K. EL KHOLY, M.R.C.S. ENG., D.P.M.,
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THE following notes demonstrate the important part which a mental factor may play in the causation of bronchial asthma:—

CASE 1.—The patient was a married youth, aged 27. When seen in November, 1926, he had been suffering from almost daily attacks of the disease for 18 months and his condition had been diagnosed as bronchial asthma by three of the leading physicians in Cairo. The disease started with daily attacks of panting which used to come on in the morning half an hour after leaving bed; they lasted about two hours each and were accompanied by profuse sweating, running from nose, and coughing with bringing up of phlegm. The attacks increased in severity and two months later the patient began to wake up suddenly about 2 A.M. with a feeling of suffocation, dyspnœa, wheezing in the chest, cough, expectoration, sweating, and coryza. After treatment by different doctors for a year the attacks became

less severe and gradually shifted their time of onset until they were occurring regularly every morning about an hour after leaving bed.

By superficial mental analysis I was surprised to find that the patient, who is known to be outwardly calm, is a neurotic person who has been subject to vague fears since childhood. He readily admitted this after first agreeing to the suggestion that the mild attacks of his illness resembled very much the state of a frightened or anxious person. These fears had their origin in infancy when he was often threatened with devils and other weird beings by an ignorant nurse. He used to be particularly afraid of staying or walking in the dark, and therefore was in the habit of having a light in his room all night. About the age of 14 or 15 those fears seemed to have centred about his father, who was an unreasonably severe parent.

The boy would wake up with the impression that a person dressed in a red gown or cloak, like the one used by his father, was standing by, or advancing towards, his bed, and he used to feel very frightened, covering up his face and holding his breath until the apparition moved away. Up till the time I saw him the patient could not put out the light while alone in his room and he became panicky if he heard the slightest sound outside during the night.

Further questioning brought out what I consider the real explanation for the onset of the attacks of asthma 18 months before. This was an incident, about a fortnight before the onset of the illness, in which the emotion of fear was prominent. It appears that his wife was one evening passing a room in their flat where soiled linen was kept, and having become the victim of an illusion that a turbaned stranger was in that room, she screamed and shouted for help. The patient came along and though he armed himself with a broomstick and tried his best to overcome his timidity, he could not bring himself to enter the room. At last neighbours—chiefly women—came on the scene and entered the room to find that the turbaned person was nothing more than soiled clothes thrown carelessly on the edge of a basket.

During further interviews I ascertained that the young man was experiencing dreams causing him to fear for the life of his child or for his own safety, and that he often woke up in a state of terror; after leaving bed in the morning he found himself in a state of anxious expectation which was relieved by an attack of asthma. He also noticed that his fear and anxieties were much less after his illness started. These observations are interesting as they tend to confirm those of Millais Culpin. Another fact brought out during analysis supports W. McDougall's statement that fear alone probably does not produce phobia; the incident causing it must be such as to evoke self-reproach, shame, or a sense of guilt. In the present case fear was admittedly accompanied by a sense of shame occasioned by the patient showing cowardice before his wife and women neighbours.

Treatment followed the lines of explanation, persuasion, and re-education, and in three weeks the patient gave up all medicines and was leaving home every morning for his work without waiting—as he used to—for the attacks to show themselves. For over a year his condition has been almost normal.

CASE 2.—In January, 1928, I saw a nurse, aged 17, working at a mental hospital, who gave nine years' history of typical attacks of bronchial asthma which came on once every week or fortnight, each lasting from one to four days. By superficial analysis I was surprised to find that about three months before the onset of her illness she was on an errand to her people's neighbours one afternoon when a big dog attacked her in a closed hall with no way of escape, and bit her in the leg. She was in a state of terror and fell down unconscious, and when she recovered ten minutes later she felt a sense of suffocation. She then stayed in bed for three months with disturbed sleep and a frequent sensation of fear whenever anyone entered her room at night; at the same time she used to have fearful dreams, waking up in a state of terror and with a feeling of suffocation. After leaving bed and getting about she began to get typical attacks of asthma.

In a later interview the patient said that the attacks often came on a few hours after being approached and threatened by a certain inmate of the hospital, who was particularly big and violent—a situation resembling that of the previous accident. She also said that before joining the service she used to get the attacks after any sort of unpleasant surprise—e.g., after becoming unexpectedly aware of another person standing behind or following her, or after anyone suddenly entered her room while she was ill in bed. She had never related her fear-evoking experiences to anyone, because she always thought it a great shame to feel afraid. I ascertained that she was delicate in health long before the accident and that as a child she was subject to vague fears, especially of darkness. She ascribes these to the way she was brought up during childhood, when the belief in mythical and weird beings was constantly ingrained in her impressionable mind.

These and similar points in the patient's history gave me the clue to the lines on which to treat her psychologically, and by persuasion and explanation many of her faulty ideas and beliefs were corrected. She has now been free from attacks for a year.

These two cases represent almost my whole experience of bronchial asthma, which makes the points of similarity between them seem the more curious. Both patients are of neurotic constitution and gave histories of attacks of fear or anxiety; and there is little doubt that if the analysis were carried further with them more material would be forthcoming to explain much that is abnormal in their disposition. Both developed their asthma after incidents in which fear showed itself prominently and evoked—through the accompanying feeling of shame—an acute internal conflict which was solved by the onset of a bodily illness, this largely substituting itself for the attacks of anxiety. Why they should develop asthma rather than another illness is a pertinent question which leaves open the possibility of a pre-existing physical tendency. Both have undergone some sort of psychotherapy which resulted in more or less complete relief.

The general practitioner is much more liable to meet with cases of bronchial asthma than the psychotherapist and I am writing these notes with the hope of interesting him in an aspect of the disease, which may often be the deciding factor in its caustion or in the precipitation of its attacks.

Medical Societies.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

A MEETING of this Association took place in the rooms of the Medical Society of London, Chandos-street, on Oct. 4th. In the absence of the President, Dr. L. R. LEMPRIERE took the chair.

Mr. SYDNEY SCOTT opened a discussion on the

SCHOOL-BOY'S EAR IN CLINICAL PRACTICE.

He projected on to the screen a number of diagrams showing the auro-nasal regions and their relations, and photographs of pathological conditions of those parts. The most important aspect of the subject was the early recognition of acute infections of the ear. Most people now recognised the advisability of incising the drum membrane in acute inflammations. Probably it had often escaped incision in the past because it was not inspected with a sufficiently strong light. Now that excellent means of examination were available, the drum should be systematically examined by the practitioner in all cases of ear trouble. Students should carry specula and mirrors for this purpose, and should not consider the examination of a patient complete until these had been used. The need of such a routine examination was especially great in fever hospitals. Many children with otitis media did not complain of pain, and were not sufficiently deaf to call attention to the ears, though the membrane was found to be bulging. Others, of course, were noticeably deaf.

Mr. Scott described the case of a boy who complained of slight pain in his ear; a little oil was put into it, and no further treatment was given. The temperature rose and was accompanied by a good deal of head pain; the school doctor thought he must have meningitis, and asked a neurologist to see him. For a week his temperature was between 103° and 104° F. Absence of opisthotonos and reflex signs excluded meningitis, and the neurologist had the patient's ears examined. One drum was bright red and

bulging, though the boy said he had no pain in the ear. On puncturing the drum pus spurted 10 inches, and only after its release was pain felt. Evidently the pent-up pus had caused anæsthesia and the absence of local pain gave a false sense of security. A mastoid operation and other treatment became necessary, since the patient had septicæmia and an infected cerebro-spinal fluid, but eventually he recovered.

In Mr. Scott's student days attendance at the ear department was not compulsory, and the general impression was that all the needed instruction could be obtained from a book—a very fallacious idea. One practitioner had estimated that 25 per cent. of his cases required some experience in ear work. There existed a curious optimism with regard to ear cases among practitioners. A shrewd observer had assured him that practically all his ear cases got well without trouble; there was earache, then discharge, and finally recovery. Ear surgeons, however—probably because the severe cases came to them—took a more pessimistic view. Mr. Scott gave the following example of the kind of case not infrequently seen by the otologist:—

The patient, a boy who had just left school, had been bathing and said that some water had entered his ear, which was not inspected. He went to the theatre that evening and in the night he awoke with intense ear pain. On the following evening the ear began to discharge, but the temperature was more or less normal. On the next evening he felt tired, and two days later he was comatose, and died in that condition without any active steps having been taken. Mr. Scott had been called in, but much too late, since death occurred before the boy could be put on to the operating table. At the post-mortem examination the whole tympanic cavity and all the air cells were found to be full of pus, which, even after death, was under considerable pressure, and the whole cerebro-spinal system, from the frontal lobe to the cauda equina, was œdematous. The presence of streptococci was demonstrated.

Cases of acute otitis media thus called urgently for recognition and attention in the early stages; they should be drained at once without waiting for com plications; they should, in fact, be dealt with on the same principles as any other accumulation of septic material. It was a great mistake to wait for the pus to burst through; it might not do so, but might take a more dangerous course. Conservative treatment was not nowadays justifiable. It could not be too clearly emphasised that incision of the drum did not itself cause deafness, and parents' objection to incision on this score could safely be set at rest. The idea arose from the fact that in the past incisions were not made until disease had produced changes in the ligaments of the ossicles or destruction of the round window. In some cases the drum membrane did not bulge, but with a good light the observer could sometimes see pus on the other side of the drum; in these cases the prognosis after the fluid had been released was very good. If delay in evacuating fluid had occurred it was desirable to open the mastoid.

Discussion.

The CHAIRMAN referred to the need of a campaign against unclean noses, since congested and dirty conditions of the nose were the origin of many cases of ear trouble. In his experience of public school-boys otitis media could undoubtedly exist without any complaint having drawn attention to the ears. In 36 per cent. of his cases of acute otitis media the first ear complaint was of otorrhœa, especially at night time, pus being seen on the bed linen in the morning. Inspection of the ear should be carried out, not once but from day to day. Eight per cent. of the cases eventually needed a mastoid operation. Ear cases were among the most serious which occurred in schools, and the question arose whether paracentesis ought to be done on every patient who complained of earache. Clearly it was needed for the virulently red and bulging drum, but a large number of cases had an abscess of the ear which resolved without interference. Fully 60 per cent. of his cases were of that kind. In young people of school age the meatus might be very narrow or abnormally curved; hence a proper examination was difficult or impossible, and one could not be sure whether the lesion was due to boils close to the drum or to some other trouble such as an accumulation of wax. He would like to know just when a mastoid operation was indicated. In his practice, if otorrhœa persisted more than three days and the temperature remained raised, he called in a surgeon, but it was not feasible to call in an otologist to every doubtful case. What was the significance of a sagging postero-superior wall? He asked for opinions on the value of otalgin; he regarded it as dangerous because it constricted the vessels.

Dr. G. E. FRIEND said he would like to hear more clearly defined the kind of cases which it was safe to leave without performing paracentesis. During 11 years he had done the operation on every case of ear trouble except where the drum looked normal. The average time of healing after the puncture was three to four days, the only other treatment being swabbing out with spirit and boric drops. Of 344 cases, only three had required a radical mastoid operation. He would like to know what was the best treatment for a chronically discharging ear, in the absence of a raised temperature or localising signs. He had had good results from insufflations of bismuth subnitrate.

Dr. J. LAMBERT asked whether a general anæsthetic was always necessary for paracentesis, or whether a local anæsthetic sufficed. He agreed as to the unclean condition of the noses of most of the school population, and thought preventive measures should be directed chiefly to the nose, and especially to the correct way of blowing the nose. Boys who had had ear or sinus trouble should be warned not to dive or swim under water.

Dr. F. G. HOBSON asked about the value of regular morning gargles or snuffles. He had thought this a valuable procedure, but Dr. J. A. Glover did not recommend it.

Dr. A. I. SIMEY said there must be many cases of ear trouble which got well without paracentesis, and spoke of the value of applying ice-bags in cases of acute inflammation of the ear.

Dr. GRAHAM FORBES asked whether the leech behind the ear was at all extensively used now in these cases. He would be glad to hear Mr. Scott's experience on the frequency of ear trouble following visits to a swimming bath. A surgeon in Freiburg traced a number of cases to swimming baths, particularly to those containing unclean water. Dr. Hastie had carried out experimental work on guinea-pigs, injecting the middle ear of the animal with water from a swimming bath, and had in that way produced acute otitis. No doubt the lowered resistance induced by the cold water favoured the onset of the inflammation.

Dr. G. L. BUNTING asked the significance of a continued high temperature after paracentesis; also whether the persistent pulsation afterwards had any serious import.

Dr. W. ATLEE said that a particular kind of ear seen in epidemics was that in which the boy complained of earache for an hour or two, and showed a very dark bleb on the drum. Shortly after the drum ruptured and the boy became comfortable. He wanted to know whether these drums should be incised. He added that for many years the Thames had not been so dirty and empty as this year, nor had so many people bathed in it; yet there had been fewer "acute ears" this summer than for a number of years past. He thought that medical practitioners should carry auroscopes.

Reply.

Mr. SCOTT, in reply, said he never incised a drum unless he saw some adequate reason, some change which was not present in the normal membrane. In some acute cases one was quite justified in waiting before incising. When inflammation of the middle ear was present, the exudation drained much better down the Eustachian tube in some cases than in others. Anatomical differences and varieties of bones added to the difficulties. He had incised a drum

within seven hours of the onset of otitis, but that did not prevent his having to operate later for severe mastoid disease. In some cases it was not safe to wait a week after incising the drum before operating on the mastoid. It was a good working rule to hold one's hand for about five days; whether the mastoid operation should be done earlier depended on whether the patient was very toxic. A good rule was that if the deep part of the meatus sagged the mastoid must be opened. He did not intend to deal with the chronic ear on this occasion. The cessation of an ear discharge was sometimes due to the bursting of a bulla. He did not pin his faith to any particular material for swabbing and syringing the ear. In cases which were painful syringing should be deferred for a few days. For incising the drum he now always used a general anæsthetic. He did not think the wrong method of blowing the nose caused otitis media; if the drums were intact when the nose was blown, infective material could not be injected along the Eustachian tube and into the ear. The routine use of gargles and snuffles was a matter which did not come into his experience; medical officers of schools were themselves in a position to supply valuable information on those points. He had ordered leeches only once in 25 years; he did not favour their use.

ROYAL SOCIETY OF MEDICINE.

SECTION OF THERAPEUTICS.

A MEETING of this Section was held on Oct. 8th, when Dr. P. HAMILL delivered a presidential address entitled

SOME PRINCIPLES OF THERAPEUTICS.

He pointed out that an accurate appreciation of the underlying conditions is essential as a basis for rational treatment. Departures from the normal phsyiology may be but manifestations of compensatory processes and attempts at "correction" are not then helpful but may hinder recovery. A high blood pressure may be necessary in a given case; nitrites will then be harmful. Antipyretics are little used in fever nowadays; on the contrary fever, artificially induced, may even be beneficial, for example in the treatment of general paralysis by malaria, and in those conditions which are improved by protein shock therapy. Many conditions which call for treatment are the result of previous illness. Damaged organs must be sustained and protected from further injury, and here lies the importance of eradicating septic foci—e.g., the removal of infected tonsils in rheumatic heart disease. Where part of a gland of internal secretion has been destroyed, the effects of the loss may sometimes be circumvented if its active substance can be isolated and easily administered; thyroid gland or thyroxin given for myxœdema, and insulin for diabetes, are good examples. Disorders of infective origin well illustrate therapeutic principles, for elimination of the cause lies for the most part within the sphere of preventive medicine. In the therapeutic sphere direct attack on organisms within the body has been made with success in many protozoal infections—e.g., malaria and amœbic dysentery. Organic arsenic preparations have proved valuable in syphilis and relapsing fever, and antimony compounds in leishmaniasis. In bacterial infections direct attack has been less fruitful; urinary antiseptics and mercurochrome are but partial successes, but the results obtained with sanocrysin in tuberculosis and chaulmoogra in leprosy augur well for the future of chemotherapy. To confer or exalt immunity is perhaps the ideal method of coping with infection if the cause cannot be eliminated or directly combated. Prophylactic immunisation and serum therapy have been very successful in many infections, but fail to fulfil all demands, owing to their inherent specificity, and in some cases owing to the brief duration of the immunity conferred. We have as yet no Mithridatium. For many infections immunising agents of sufficient potency have not yet been developed, and the body must, therefore, rely on its own powers of resistance.

To raise resistance to a high pitch and maintain it there should be our constant aim. Can it be said that adequate attention is devoted to the problems involved? Nutrition, elimination, rest, and general hygiene are the foundations on which resistance to infection and the power of developing immunity are based. Observations by Edward Mellanby and his colleagues indicate that deficiency of vitamin A in the dietary lowers resistance to infection in experimental animals, and a generous supply of this vitamin to patients with puerperal septicæmia is said to have lowered the mortality to zero in a series of cases. In a London business house during the influenza epidemic of the early part of this year a preparation rich in vitamins was supplied to those who desired to take it. There was hardly an absentee owing to influenza or "cold" amongst those who availed themselves of the offer. The conclusion that diet is a large factor in controlling resistance to infection and the development of immunity may fairly be drawn, and the complete proof of this proposition will be a therapeutic advance of the first magnitude. The consumption of milk, dairy products, and oily fish in this country is far too small; incidentally, advocacy by the medical profession of dietary improvement will benefit agriculture as well as the health of the community. Rest is still underrated as a factor in treatment. The widespread use of hypnotics is disquieting; the avoidance of the necessity for their use is desirable. In spite of the importance of quiet, especially for the sick, hospitals and nursing homes still mention the fact that "trams pass the door" as a recommendation rather than a drawback. The rebuilding of hospitals in the inner zones of large towns is surely not consistent with the requirements of rest and hygienic surroundings. The removal of wards to the outskirts of the towns, and the erection of less permanent buildings which can be rebuilt and modernised every 40 or 50 years according to the advance of knowledge and changing conditions is surely a way of progress that demands consideration.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

(*Continued from p. 713.*)

SECTION OF TUBERCULOSIS.

Apical and Subapical Tuberculosis.

Dr. D. P. SUTHERLAND (Manchester) presiding, Dr. MAURICE FISHBERG (New York) opened the discussion. Pathological anatomists and clinicians had, he said, long known that the number of people with tuberculous lesions in the lungs was much higher than recorded. The vast majority of tuberculous lesions were found in the apex of the lung and remained in that region. Nearly all cicatrised lesions which remained inactive and gave no trouble during life were in the apex. These lesions were often found clinically, and with the aid of X rays during periodical examinations of healthy persons, which were becoming the vogue in the United States. In patients with non-pulmonary tuberculous lesions, sent for chest examination, changes in resonance were almost invariably found at the apex of the lung, along with altered breath sounds and, perhaps, small adventitious signs; but such patients hardly ever offered significant pulmonary symptoms. In these cases, if death ensued because of the tuberculous infection, it was the result of acute pneumonic phthisis or more commonly miliary tuberculosis. Similar apical lesions were found among persons who suffered from frequent "colds"; they might spit blood and

have tubercle bacilli in the sputum, but with or without therapeutic intervention they did well. It was such cases as these which were diagnosed as tuberculous by the ultra-cautious physicians, and supplied the material for any "cure" which happened to be introduced at the time. They also supplied the "early" and the "curable" cases considered suitable for sanatorium treatment. They were apparently the residua of childhood infection which had become obsolete. While 10 per cent. of civilised mankind died from active and progressive tuberculosis, it had been shown that only about 7 per cent. of the persons with apical lesions developed active tuberculosis or died from the disease.

Turning to subapical lesions, Dr. Fishberg remarked that valuable time might be lost in the diagnosis unless microscopic examinations of the sputum revealed tubercle bacilli, or unless X rays disclosed a soft clouded patch isolated in the midst of apparently healthy lung tissue just below the clavicle, often towards the axillary portion of the lung. The nature of the patch was broncho-pneumonic, of the type seen in primary tuberculosis in children or in tuberculous pneumonia in adults. Over 60 per cent. of subapical lesions manifested themselves in persons under 25 years, as against 36 per cent. of apical lesions. Over 35 years the percentages were 11 and 32 respectively. Under 25, unless a good radiogram was taken, or the sputum found positive, the case was missed. He stressed the importance of X ray examinations; in the United States every tuberculosis doctor had an X ray plant in his surgery right at hand. Early cavities were not as a rule revealed by physical signs, it needed X rays to disclose them. The differentiation of apical from subapical lesions was of immense therapeutic importance. At Bedford Hills Sanatorium, of the patients with subclavicular lesions, 66·4 per cent. had a positive sputum against only 15 per cent. with apical lesions. Strict isolation, the backbone of tuberculosis prevention, was not indicated in 85 per cent. of apical cases, which rendered prolonged and costly institutional treatment unnecessary.

Sir HUMPHRY ROLLESTON (Cambridge) agreed that tubercle did not begin at the apex; but the term "apex" was often employed when speaking of conditions in the upper lobe. It was an interesting question whether the infraclavicular site was due to exogenous reinfection in a person who had lost his immunity from infantile infection, or an endogenous and metastatic reinfection from dormant foci, such as tuberculous glands, lying perhaps in close contact with the bronchi. Possibly both explanations were true in different cases.

Prof. A. RAMSBOTTOM (Manchester) believed the majority of apical (in the strict sense) lesions originated in childhood, and were really blood-borne. Many of the apical lesions were of bovine origin, as opposed to the subapical which were of human origin. It was extremely difficult to decide whether a case was one of apical or subapical disease, and he confessed difficulty in finding a pulmonary lesion in some of the cases in which tuberculosis had been suspected from the general symptoms and the discovery of acid-fast bacilli. He considered the so-called "abortive" tuberculous case, with bacilli found for a short time, more of a pathological fact than a clinical entity.

Dr. J. WATT (Godalming) said some of his observations conflicted with those of Dr. Fishberg. He had compared two groups of cases, apical and subapical, similar in history and clinical course; in 72 per cent. of the apical and 81 per cent. of the infraclavicular tubercle bacilli had been found at some time or other. These figures were in contrast with Dr. Fishberg's 15 and 66·4 per cent.—a complete inversion for the apical. From the sanatorium at Godalming 58 per cent. of the apical cases and 48 per cent. of the infraclavicular were discharged with disease quiescent. Practically all the new work on apical and subapical tuberculosis was, he said, based on radiography, which was not yet infallible. Apical tuberculosis was not diagnosed in this country with anything like the frequency it was in America or Germany. His own figure of 72 per cent. showed that British sanatoriums did not needlessly keep cases. He believed that: (1) the initial lesion in the adult type of phthisis occurred in diminished frequency from the lung apex (sc. above the first rib) downward; (2) in general the nearer the tuberculous lesion lay to the apex the greater the chance that it would heal.

Dr. W. BROCKBANK (Manchester) said that pulmonary tuberculosis was almost unknown among workers in lime and plaster-of-Paris, and he described special investigations made in the North-East States of U.S.A. and in Canada, from which remarkable figures of immunity had been collected.

Dr. FISHBERG, replying, said more of the apical cases would be found in private or consulting practice than in sanatoriums. In the United States they were using X rays to the utmost—they owed it to their patients. He thought the British statistics would assume a different character if every case was X rayed.

Sanocrysin Treatment.

Dr. J. R. GILLESPIE (Belfast) presided when Dr. B. R. CLARKE (Belfast) read a paper on sanocrysin treatment in pulmonary tuberculosis. Sanocrysin in a pure state, he said, was not injurious to healthy mammals in doses of 0·1–0·15 g. per kilo of body-weight; tolerance was increased by graduated dosage. The kidneys were mainly responsible for its elimination which took place more slowly than was at first supposed. It was much more liable to damage a tuberculous organ than a healthy one. In afebrile patients it was safe to begin with 0·25 g., and to increase by the same amount in arithmetical progression until 0·75 g. had been reached, which dose might then be repeated four or five times. This sequence would usually be tolerated well by patients weighing from 8 to 10 st. Over 10 st. the final dose might be increased to 1·0 g. In very light or emaciated patients 0·5 g. should be the maximum. Interval between the early doses about a week, between the larger doses 10 to 14 days. In 16 per cent. of patients treatment had to be abandoned when less than 2·0 g. had been administered; some patients could not tolerate the drug, even in smaller doses. At the end of 1928 102 patients at the Forster Green Hospital had been discharged after sanocrysin treatment. Five cases given the original large doses all showed a loss of weight varying between 1½ and 16½ lb., and developed some complication. In the remaining 97 treated by graduated doses, complications—the most serious being prolonged fever with a spread of the disease—occurred less frequently. Do not, he said, use sanocrysin unless there was a definite probability of obtaining better results with it than by conservative methods. Where sanocrysin was well tolerated, beneficial results followed in a high proportion of cases. The effect on fever cases which had not yielded to prolonged rest in bed was often very marked. For the positive sputum cases discharged from the hospital from July, 1925, to December, 1928, the after-histories were traced in the spring of 1929. Of the sanocrysin-treated, 80 per cent. of the moderate grade were alive against 63 per cent. of those not so treated; in the advanced grade, 58 per cent. of the sanocrysin-treated were alive, against 30 per cent. of the untreated. To sum up: sanocrysin was of value in two types, the early exudative cases with some resistance, and the predominantly fibroid type with symptoms and persistent tubercle bacilli in the sputum. In the exudative case he used sanocrysin as soon as possible; in the fibroid, not until sanatorium treatment had had a trial. Sanocrysin could in some cases be successfully combined with artificial pneumothorax. It was not a cure for pulmonary tuberculosis, but it was a valuable aid to treatment.

Dr. F. R. G. HEAF (Warwickshire) gave his experience of 120 positive pulmonary cases at the Warwickshire Sanatorium. He, too, had found the Danish initial doses too large. If loss of weight and rise of the sedimentation test occurred the interval between

the doses, not the doses themselves, was increased. Sanocrysin had a therapeutic value except in cases associated with toxic anæmia, cardiac and renal complications, and poor general condition, or with symptoms of enteritis. He followed the Danish dosage, increasing from 0·1 to 1·0 g. in 64 days. He specially stressed the need for attention to the weight of the patient. It was important to eliminate tubercle bacilli from the sputum before terminating sanocrysin treatment. Comparing the after-histories of 50 sanocrysin-treated patients with 50 artificial pneumothorax cases otherwise similar, the results were superior for artificial pneumothorax. Sanocrysin, for children with positive sputum, gave good results, the sputum in eight out of ten ceasing to be positive. When more time had elapsed to judge results he expected children would have proved better subjects than adults.

Dr. PETER W. EDWARDS (Cheshire) said he began to try sanocrysin two years ago, the great majority of the 37 patients treated being very advanced. The results on discharge from sanatorium were much better than he expected, 31 being definitely improved clinically and radiologically, 3 worse, and 3 dead. The cases had not been followed up.

Dr. W. STOBIE (Oxford) agreed with Dr. Clarke that the fibro-caseous type of pulmonary tuberculosis of moderate duration gave more satisfactory results, on the whole, from treatment. He agreed with Dr. Heaf that children with the adult type of phthisis occasionally did well with sanocrysin. He regarded sanocrysin as a therapeutic agent which, cautiously used, was of restricted but definite value in helping to clear up the morbid processes in certain carefully selected cases of pulmonary tuberculosis.

Prof. S. LYLE CUMMINS (Cardiff) stated that sanocrysin treatment aimed at something quite different from artificial pneumothorax and sanatorium treatment, and its value in tuberculosis had been obscured by comparisons. Although sanocrysin failed to kill tubercle bacilli in vitro, it had a marked action on tuberculous foci in vivo. He gave detailed notes on the 21 patients treated in the residential institutions of the Welsh National Memorial Association from 1925–28. Of the seven who had died, four were unsuitable for sanocrysin treatment on commencement. In other cases, whether ultimately fatal, worse, or better, in which the injections were sufficiently tolerated to allow of an adequate series of doses, a marked improvement resulted. In sanocrysin we had, he said, a means of raising the status of certain patients to a point at which they might enjoy the benefits of collapse therapy or sanatorium treatment.

Conditions Simulating Pulmonary Tuberculosis.

Dr. G. LISSANT COX (Lancashire) being in the chair the discussion was opened by Dr. F. G. CHANDLER (London). It was, he believed, by bacteriological examination of the sputum and the fæces, and by these alone, that we could establish a diagnosis of pulmonary tuberculosis or exclude it. Because of the neglect of these simple tests many cases of pulmonary tuberculosis escaped recognition in the early stages, and many non-tuberculous conditions were diagnosed as tuberculous. Examination of the fæces was necessary, because in many cases of active pulmonary tuberculosis either no expectoration was produced, apart from naso-pharyngeal mucus or muco-pus, all the pulmonary secretion being swallowed. Tubercle bacilli, if swallowed, could easily be found in the stools by the antiformin method. Since 1924 at Victoria Park Hospital the fæces had been examined as a routine when the sputum failed. Many conditions might simulate pulmonary tuberculosis, sometimes only when they were fairly advanced, as with pneumonoconiosis, sometimes only at the beginning, when symptoms (cough, sputum, bleeding) might be similar or identical; later they began to diverge and the picture became distinctive. Occasionally tuberculosis might coexist with one of the diseases by which it was simulated, such as pneumonoconiosis, lymphadenoma, syphilis, new growth, bronchiectasis, and mitral stenosis, and he instanced a number of points which would help in the diagnosis, assuming that tubercle bacilli had been found. The resemblance might be due to symptoms, such as those of fibrosis, or to the appearance of a serous pleural effusion. He enumerated the various diseases in which these occurred, giving here and there an impressionist hint at the most important points in their differentiation. The only method of distinguishing non-tuberculous from tuberculous fibrosis was to prove the absence or presence of tubercle bacilli. Pneumonoconiosis might arise from many occupations; so could anthracosis, silicosis, asbestosis, byssinosis (workers in cotton, felt, and shoddy mills). The most remarkable symptom in asbestosis was dyspnœa; in some cases asbestos fibres were found in the sputum. The introduction of iodised oil had made it possible to exclude or to localise bronchiectasis. In difficult cases the routine to follow was: a careful history, an exhaustive pathological examination, lipiodol injections, X ray examination, bronchoscopic examination. In certain cases such procedures as replacement and thoracoscopy would be needed, in others thoracotomy. He would put first the pathological examination.

Prof. F. E. TYLECOTE (Manchester) considered post-influenzal conditions should be more widely known and appreciated. There had been a tendency to smile at the suggestion he, along with others, had made that pulmonary syphilis was more common than generally believed.

Dr. W. BURTON WOOD (London) exhibited a number of slides illustrating asbestosis and pneumonoconiosis. He remarked that anthracosis has fallen into disrepute as carbon had not the effect which was believed on the lung. In asbestosis X ray films showed obliteration of the costal angles; there was a central core of asbestos fibre in the bodies in the lung. He hoped there would not be some day a claim on the State for the provision of preventorium treatment for pre-asbestos children.

Dr. P. HEFFERNAN (Derbyshire) said many persons notified as suffering from pulmonary tuberculosis were really cases of silicosis. Workers in stone tended to develop tuberculosis in later life, and the disease then generally ran a rapid course. To diagnose silicosis three things were necessary: history of exposure to silica dust, a radiogram, failure to find tubercle bacilli. He had seen a case compensated for silicosis under the special scheme; five years later the post-mortem showed the lungs free from silica; no X ray had been made. Silicosis was occasionally limited to the upper part of the lungs.

Dr. H. G. TRAYER (Baguley) believed there was a danger of attaching undue weight to the finding of an isolated positive result in a series of negatives where the clinical findings did not fit in with the presence of bacilli.

Dr. L. S. T. BURRELL (London) mentioned five conditions which resembled tuberculosis: occupational diseases arising from dust (chiefly silica) inhalation, presence in the lung of a foreign body, empyema (fibrosis at the site might be connected with a dilated bronchi and cause periodic attacks of hæmoptysis), broncho-pneumonia, pneumonia, and healed tuberculosis. The absence of tubercle bacilli from purulent sputum was strong evidence against tuberculosis. Hæmoptysis should not be taken as an indication of tuberculosis; the great majority of cases of bronchiectasis had hæmoptysis of considerable quantity.

SECTION OF OTO-RHINO-LARYNGOLOGY.

NASAL CATARRH IN CHILDREN.

Dr. DAN MCKENZIE (London), in opening a discussion on persistent nasal catarrh, especially in children, remarked that the condition was common, important, and frequently intractable. Very many of the cases were undoubtedly associated with adenoids. But

while the presence of adenoid hypertrophy often interfered with treatment he did not consider it was the cause of the condition. As R. C. Clarke had pointed out, the catarrhal child was catarrhal from the early months of life, when any appreciable hypertrophy was rare. Such children showed well the generalisation of the catarrh, bronchitis being the rule rather than otherwise. Further, catarrh was very common in adults, in whom it was most exceptional to find adenoids. An important group was certainly associated with sinus infection, with or without adenoids. Sinus infection in children was not uncommon. He placed little reliance on skiagraphy or on transillumination in excluding this condition in children. The only satisfactory method was by puncture exploration of the antra ; owing to the high level of the antral floor this should be done via the middle meatus.

Apart from these there was a large class without adenoid hypertrophy or unrelieved by removal of adenoids. A general soppiness of the nasal mucosa was present with some degree of obstruction and presenting often the classical " adenoid " facies. It was important to remove large posterior ends of the inferior turbinals when dealing with adenoids, but he found this much less often needed than he had formerly thought. Such patients appeared always to have a slight cold which got worse at frequent intervals. The population as a whole seemed to be permeated with carriers. Most of us " caught a cold " about twice a year and thereby acquired immunity sufficient to last for some six months. The catarrhal patient did not get sufficient immunity. This was the class that was difficult to treat. He relied more and more on general measures aimed at improving the health and building up resistance. But here he felt impelled to utter a protest against the extremist tendency everywhere noticeable. Not content with exposing themselves, the protagonists of the " back to nature " school subjected their children to the same régime. A shivering miserable child with running eyes and nose and purple skin was an object for profound pity. We could not afford to ignore the many generations that separated us from savagery, and to attempt to return to nudity defeated its own object. Many of us could not stand this intensive hardening, which was by no means the modern method some of its advocates supposed. It was related of one Aristides that having a catarrh he sought the advice of the oracle ; the god told him to smear himself with mud and run thrice round the temple. In spite of bitter weather he did so, and was rewarded by a warm glow and health. But his companion who attempted the same treatment suffered a paralytic spasm and was hardly restored to life. So too with modern patients, a too rigorous disregard of east winds might not merely fail in promoting health, but prove actually disastrous.

Mr. F. P. GILHESPY (Birmingham) said he had recently examined 50 consecutive cases of chronic nasal catarrh in children attending a school clinic. He divided them into five groups :—

(*a*) Previous tonsil and adenoid operation : Present antral disease, 23.

(*b*) No previous operation, no adenoids : Present antral disease, 9.

(*c*) Previous tonsil and adenoid operation : No antral disease, 10.

(*d*) Previous tonsil and adenoid operation incomplete, 6.

(*e*) Atrophic rhinitis, 2.

The criterion of antral disease was in each case naked-eye pus or muco-pus in the syringe washing. In most of the cases pus had been present in the nose. The presence of adenoids interfered with the treatment of the antral disease. For the latter, except when acute, he thought repeated lavage of little value ; a pernasal antrostomy was needed. In 32 of the 50 cases examined there was antral disease and none of these had adenoids ; absence or removal of adenoids was not in itself enough to secure recovery of the sinusitis. In the third category were ten children without sinus disease whose catarrh persisted despite removal of adenoids. This constituted the true " catarrhal " group. Treatment must be along general lines, during which ultra-violet therapy proved valuable.

Mr. DOUGLAS GUTHRIE (Edinburgh) recognised two varieties of adenoid hypertrophy. A central mass was common ; less frequently one found a diffuse sheet of adenoid tissue, and in these cases nasal discharge rather than obstruction was likely to be present. Another common cause of chronic rhinitis in Edinburgh was diphtheritic infection. Sinus disease accounted for a third group. Finally, there was a class of cases in which infection persisted in a narrow nose, following a series of acute colds. For this type it was necessary to restore the patency of the nasal passages by conchotomy or a septum operation. Although he did not like such operations in the young he often felt it was necessary to do them, and if one was careful no arrest of nasal development need occur. Further measures were cleansing of the nasal passages by means of suction and oily applications. Diastolisation was valuable ; by means of a rubber bag the mucosa was subjected to massage. General measures should include diet, ultra-violet therapy, and large doses of sodium bicarbonate. Properly supervised breathing exercises were important. Ionisation he regarded as impracticable in children and vaccines as useless.

Dr. T. C. GRAVES (Birmingham) remarked on the great importance of treating chronic nasal discharge. Among insane adults one-third had chronic rhinitis. He instanced six adult cases in which treatment of the nasal infection was followed by recovery from (certified) insanity.

Dr. P. WATSON-WILLIAMS (Bristol) said the great majority of cases were caused by either adenoids or sinus disease or both. Sinus disease was much more frequent in young children than many supposed who did not make systematic search for it. When the antra are healthy the sphenoidal or ethmoidal cells should be examined. This could be done in even quite young children.

Tuberculosis of the Larynx.

In opening a joint discussion with the Section of Tuberculosis Mr. W. G. HOWARTH (London) said that laryngeal abnormality was present in 10 per cent. of all hospital cases of pulmonary tuberculosis. This might be :—

(*a*) Anæmia of the mucosa, part of a general anæmia.

(*b*) Interarytenoid hypertrophy, not necessarily tuberculous.

(*c*) Tuberculous laryngitis.

The incidence varied considerably with the class of case. He had found it in 8 per cent. of sanatorium patients, in 4 per cent. of the patients attending the Chest Hospital. At the State Sanatorium, New Jersey, 25 per cent. of the patients were affected. Very rarely one might find a primary tuberculoma of the larynx. It occurred in elderly persons and was apt to be mistaken for cancer. But almost always the laryngeal condition was secondary to pulmonary disease. The original infection occurred through the mucous membrane ; secondary submucous lymphatic spread subsequently took place. Most commonly the posterior half of the larynx was affected. But the lesion could occur anywhere, and when in an unusual situation diagnosis might be difficult. As examples of anomalous appearances he cited a gelatinous infiltration of the whole of one vocal cord or a diffuse symptomless subglottic infiltration. Many unusual appearances of the larynx were eventually shown to be tuberculous.

In addition to the common symptoms of hoarseness or dysphagia he would direct attention to three early signs : (1) a voice easily tired ; (2) sudden and intermittent disturbances of phonation ; (3) tickling or

dryness of the throat. Early diagnosis was of the very greatest importance for the sake of treatment. Treatment should be primarily general, as the pulmonary lesion was the important one. Local treatment consisted in: (1) absolute voice rest; (2) galvano-cautery in selected cases. With voice rest even very large lesions might heal completely; it might need to be continued for as much as six months and the patients required constant encouragement. The cautery was valuable in carefully selected cases; it did not destroy the actual lesions, but acted as a counter-irritant. He had had little experience of direct sunlight treatment of the larynx, but found that the dose required very careful regulation. With artificial sunlight the treatment was lengthy, and he doubted whether a corresponding advantage was secured. In rare cases where the lung condition was inactive and the laryngeal progressive a tracheotomy might secure the complete rest of the larynx that was essential. In the later stages treatment should be symptomatic and directed to relief of cough and of pain. For the latter he relied on insufflations, and had been disappointed with nerve-blocking injections.

Sir STCLAIR THOMSON (London) recalled that one case in every three of phthisis suffered from a laryngeal complication, and estimated that 55,000 such sufferers existed to-day in England. Fortunately not only was phthisis becoming more rare, but the incidence of laryngeal tubercle was also declining. Formerly males had been more affected, but since the entry of women into the labour market the sex difference had largely disappeared. The more advanced the pulmonary disease the greater the incidence of laryngeal lesions. Further, the presence of a laryngeal complication was of great prognostic significance. Of the cases from a sanatorium without laryngeal tubercle two-thirds were alive ten years later; of those with laryngeal tubercle only one-third survived ten years. The difference was most pronounced among the early cases. When a laryngeal complication occurred during sanatorium life it was of grave significance. Of cases treated by silence alone the larynx was cured in one-third and improved in one-third. Among the rare cases selected for cauterisation 62 per cent. were cured. Of all sanatorium patients one-fourth were cured.

Mr. H. MORRISTON DAVIES (Ruthin) emphasised the importance of routine examination, even in cases of phthisis with no laryngeal symptoms. The presence of laryngeal tubercle was of material significance where operative treatment for the lung was under consideration. Healed laryngeal tubercle, if attended with much deformity, so that a good cough could not be produced, was a contra-indication for artificial pneumothorax. On the other hand, the presence of a laryngeal complication might determine one to do a pneumothorax operation, where without it one would not. Though of less significance where phrenic avulsion was contemplated the condition of the larynx needed even greater regard when a thoracoplasty was under consideration.

Sir JAMES DUNDAS-GRANT (London) pointed out that in cases of doubt a biopsy presented great advantages, especially where a thyrotomy might be contemplated. He relied on galvano-cautery for many cases of laryngeal tubercle, and thought pain especially was a pressing indication.

Mr. R. SCOTT STEVENSON (London) had seen cases in which careful clinical and radiological examination failed to reveal any pulmonary tubercle, but where there was advanced laryngeal disease. Laryngoscopy was therefore important with any obscure chest condition.

Dr. S. MORITZ (Manchester) emphasised the importance of using the galvano-cautery to effect deep punctures, to produce fibrosis, and not superficially. He referred to the difficulties presented by the simultaneous occurrence of syphilis and tubercle in the larynx.

Reviews and Notices of Books.

STONE IN THE URINARY TRACT.

By H. P. WINSBURY WHITE, M.B., Ch.B. Edin., F.R.C.S., Assistant Urological Surgeon, St. Paul's Hospital. London: J. and A. Churchill. 1929. Pp. 344. 35*s*.

CLOSE upon Mr. Swift Joly's recently published work on "Calculus" comes another treatise on the same disease by Mr. Winsbury White. The ground covered is the same, but the subject is treated differently. Whereas Mr. Swift Joly produced a monograph for the expert Mr. Winsbury White caters for the practitioner and for the general surgeon who deals occasionally with cases of stone. For this reason such matters as the ætiology of calculus formation are dealt with less fully in the book now under review, and more space is devoted to such practical points as lithiasis in pregnancy and in children. This addition will be appreciated by the expert as well as those for whom the book has been more particularly written. But as a matter of fact the book contains a vast amount of information interesting to all genito-urinary surgeons. The only criticisms we would offer are that (1) the arrangement of the subject matter is somewhat haphazard; when the book is used for reference it is difficult to find information without first consulting the index; (2) the important points in the treatment of stone do not receive enough emphasis at the expense of unessentials. The plates are excellent and are more numerous than is usual in a work published this side of the Atlantic. The bibliography at the end of the book is excellent. The author has searched out the literature of stone from the years 1910–28 so that those who require information not found in the text may know where to obtain it.

ORTHOPÆDIC SURGERY.

Second edition, revised. By Sir ROBERT JONES, Bart., K.B.E., C.B., F.R.C.S., F.A.C.S., and ROBERT W. LOVETT, M.D., F.A.C.S. With the collaboration of NATHANIEL ALLISON, M.D., F.A.C.S., FRANK R. OBER, M.D., and HARRY PLATT, M.D., M.S., F.R.C.S. London: Humphrey Milford, Oxford University Press. 1929. Pp. 807. £2 12*s*. 6*d*.

IN the interval of six years since we welcomed the first edition of this work the untimely death of Dr. R. W. Lovett, of Boston, has put an end to a fertile collaboration. Sir Robert Jones has wisely sought the help of two well-known orthopædic surgeons of Boston and of Mr. Harry Platt, of Manchester. The work has been brought thoroughly up to date, and the omissions which we called attention to in our former notice have been remedied. The excisions of obsolete matter have not balanced the additions, and the book is more than a hundred pages larger than it was. The number of figures has also been increased. Otherwise there is no great change in the book, nor is any revolution in treatment recorded. Scoliosis, which was a subject that the late Dr. Lovett made peculiarly his own, is dealt with at greater length than before, and details of new methods of applying plaster jackets are described. The sound, conservative opinions expressed in the first edition on arthroplasty of the knee, and the treatment of Pott's disease and scoliosis by bone-grafts or the methods associated with the name of Russell Hibbs, of New York, are repeated. The subject of backache or low back pain, as the Americans prefer to call it, is still discussed cautiously; the waves of enthusiastic surgery based on supposed subluxations, minor bone injuries, and abnormalities of development of the spine, seem to spend their energy before they reach these shores. The chapter on Volkmann's ischæmic paralysis is a valuable addition, and fills a gap which was left in the first edition. That on acute osteo-

myelitis is of notable value, and follows to a great extent the lines of the discussion in the Orthopædic Section of the Royal Society of Medicine last year. Fractures are dealt with at greater length in this edition, and this will especially enhance the value of the work to the practitioner who is not concerned with the more specialised branches of orthopædics.

PRINCIPLES AND PRACTICE OF MINOR SURGERY.

Sixth edition. By EDWARD MILTON FOOTE, A.M., M.D., Visiting Surgeon, St. Joseph's Hospital, &c.; and EDWARD MEAKIN LIVINGSTONE, B.Sc., M.D., Assistant Visiting Surgeon, Bellevue Hospital. London and New York: D. Appleton and Company. 1929. Pp. 787. 35*s*.

THIS work presents the principles and practice of minor surgery in all its branches in a logical, scientific, and readable manner. It is divided into three parts—minor surgical technique, the principles of diagnosis and treatment, and the practice of minor surgery. The author's interpretation of "minor" surgery is almost too liberal, for the volume includes consideration of every surgical procedure, outside the abdomen, with which the practitioner could legitimately be called on to deal. Details of the pathology and treatment of surgical conditions, as grave as rupture of the urethra, loose bodies in the knee-joint, or the operation of colostomy are given; yet there is no mention of appendicitis or of perforation of gastric or duodenal ulcers. Apart from such curious regional limitation the volume should prove invaluable to the practitioner, who is called on to deal with surgical cases and to the young surgeon. The teaching is quite modern and at the same time sound and practical. The majority of the illustrations are beautifully reproduced photographs.

ENDOCRINOLOGY AND ORGANOTHERAPY.

Diseases of the Thyroid Gland. Second edition. By A. E. HERTZLER, M.D., Surgeon to the Halstead Hospital, Kansas. London: Henry Kimpton. 1929. Pp. 286. 32*s*.

IN this new edition the result of a continuation of Dr. Hertzler's studies on the pathology of goitre and thyrotoxic conditions is presented. There are also included chapters dealing with the management of goitre patients and the technique of thyroid surgery, but the author's views on the pathology of these diseases are the chief point of interest. The most usually accepted classification of goitres divides them up into colloid goitres, adenomas without toxic symptoms, adenomas with toxic symptoms, and Graves's disease or true exophthalmic goitre. Dr. Hertzler holds that these groups do not represent separate diseases, but merely stages for the most part of one progressive disease. The same individual may run the gamut of the whole series. The colloid goitres are smooth in outline and the patient has no constitutional symptoms; their beginning depends on a uniform increase of colloid within the acini resulting in the homogeneous enlargement of the whole gland. This is the early stage. After a time new acini appear, adding their part to the increase in size of the gland; with their continued development the thyroid becomes irregular or bosselated. These are the glands which some authors call "adenomas." Hertzler believes that they are not truly "adenomatous," and he would reserve the term adenoma for the true benign tumours or fœtal adenomas. The latter develop from a single nodule and are isolated, encapsulated, and completely surrounded by the substance of normal thyroid on which they rest, but are independent of it in structure and growth. He suggests that the confusion in terminology is due to the failure to distinguish between the bosselations of an old colloid goitre and the fœtal adenomas. The clinical significance of these two varieties is entirely different. Hertzler holds further that the bosselated colloid goitres sooner or later become toxic, generally after about 16 years. The fœtal adenomas are not subject to the periodic progressions and recessions of the bosselated goitres and grow gradually. They may degenerate and form cysts or they may become malignant; sometimes they become mildly toxic, but this is comparatively rare. Finally, he would differentiate true Graves's disease from the toxic bosselated goitres. In true Graves's disease it is the proliferation of the epithelium of the original acini which is the characteristic feature, while in the toxic bosselated goitres the toxicity is due to the proliferation of acini developing in the interstitial cells.

These views require careful consideration, and their presentation in the present volume is clear and concise.

Organhormone und Organtherapie. By Prof. AUGUST BIER and others. Munich: J. F. Lehmanns. 1929. Pp. 91. M. 4.50.

THE principal thesis of this little book, which is made up of reprints from the *Münchener Medizinische Wochenschrift*, is that, since organs normally regenerate and give rise to substances which preserve the normal physiological balance, it should be possible to approach something like regeneration or at least re-established function by the administration of preparations of appropriate organs in cases of disturbed structure or function. This conception is, of course, being widely applied in many directions, but those followed in this book merit special attention, because a measure of success claimed by so distinguished an authority as Prof. Bier cannot be ignored. The book is divided into four parts. In the first Prof. Bier deals with the general principles of organotherapy and in particular with the work of his pupils, set out in the succeeding sections. The second part consists of a discussion of diseases of the liver and bile passages which have been treated by various extracts of liver, gall-bladder mucosa, and extrahepatic accessory glands. The substance chiefly used was choloton, and the authors frankly state that they are concerned with the clinical effectivity of the preparation and not with its mechanism of action. Cases of many varieties of liver and gall-bladder diseases have been treated with an improvement of symptoms (jaundice, pain, rigors, enlargement of liver, &c.) which impressed the observers. In the third part the treatment of tabes, progressive paralysis, and multiple sclerosis with a complex preparation of nervous tissue, vitamins, calcium, iron, and carbohydrate is described. This preparation is called Promonta, and is prepared in the cold on the principle of keeping the nerve substance unchanged. Treatment by the mouth with this substance combined with strychnine nitrate is said to have produced extraordinary symptomatic improvement. The last and shortest part deals with the treatment of Graves's disease by injection of animal blood. Sterile defibrinated ram's and calf's bloods were used, 5 c.cm. doses being injected intramuscularly at eight-day intervals. Anaphylaxis is obviated by using the different animals' bloods alternately, two to four injections being generally sufficient to produce a distinct improvement in symptoms. It is claimed by the authors that it is not merely the febrile reaction which determines the degree of improvement, but some more fundamentally important process. Time and large numbers of controlled cases only can decide on the reliability of these findings. The principles involved are vague, but the book is commendable in so far as it insists on a broader physiological outlook and gives many useful suggestions for further research.

Die Pathogenetischen Grundlagen der Thyreotoxicosetherapie. By JOHAN HOLST. Oslo: I. Kommisjon Hos Jacob Dybwad. 1928. Pp. 176.

THE introduction of iodine into the treatment of exophthalmic goitre has during the last few years given results which opened a new chapter in our knowledge of the diseases of the thyroid gland. It is

quite clear that the theoretical basis for such a treatment is something totally different from that of the treatment of endemic goitre by iodine salts; for, whereas the latter is now well established as due to a deficiency of iodine, the former is associated rather with a flooding of the tissues with the active principles of the thyroid which are certainly in some way combined with iodine. Holst's work presents a definite advance in the direction of explaining this apparent paradox. He examines the problem by chemical, histological, and clinical methods. Administration of iodine (Plummer's method) in Graves's disease is followed by a rapid clinical improvement, fall in metabolic rate, and an increase in stored colloid in the gland itself. Analysis of the blood for iodine shows that this substance occurs in two main forms, one inorganic and alcohol soluble and the other organic, alcohol insoluble, and associated with protein. Both these fractions are much increased in thyrotoxic conditions. Treatment with iodine produces the effect of very largely increasing the inorganic fraction in the blood but of diminishing the organic to almost normal. Taking this in conjunction with the other observed effects of iodine Holst puts forward the view that the thyrotoxic condition is due to the flooding of the tissues with the active secretion of the thyroid, that this active secretion is identical with the organically combined iodine in the blood, and that the controlling factor is inorganic iodine in the blood. No information is given about the factor which gives rise to the so-called thyroid diarrhœa, for the high inorganic iodine in the blood cannot be the controlling factor normally. Throughout the book no mention is made of other glands which certainly have to do with the normal endocrine balance. Dr. Holst pays careful attention to the selection of the best period for operation after the preliminary iodine treatment, and to the fact that if this period is missed thyrotoxic symptoms again supervene as a result of hyperiodism. Emphasis is laid on the danger of intermittent treatment; once treatment with iodine is begun it should only be discontinued for operation. Clearly this treatment is not yet suitable for application in general practice. Its main value lies in so diminishing the thyrotoxic symptoms that operation can be safely undertaken. Continued treatment after operation with small doses of iodine has in Holst's cases yielded good results.

The book is well worth studying because it is written by one who is both an endocrinologist and a surgeon. It is written in pleasant style, easy to follow, and the diagrams are excellent.

DIAGNOSTIC METHODS.

Diagnostic Methods and Interpretations in Internal Medicine. By SAMUEL A. LOEWENBERG, M.D., F.A.C.P., Assistant Professor of Clinical Medicine, Jefferson Medical College. Philadelphia: F. A. Davis Company. 1929. Pp. 1032.

THIS book has a wide scope, for the author's aim is to cover the field of diagnosis in medicine. The chapters devoted to the circulatory and respiratory systems are adequately dealt with and physical examination is lucidly explained; the examination of the abdominal viscera is not so well described, while the section on the endocrines suggests rather the small booklets thrust upon practitioners by commercial firms—for example, a differential table is given to distinguish between pineal and thymus hyper function. That such tables, which have no scientific foundation, should be incorporated and a method of such diagnostic value as the use of lipiodol omitted detracts greatly from the value of the book. The author likes differential tables, although the ones supplied are not of much diagnostic value. One table given is that of the differential points between "gall duct" (this term is new to us and its significance uncertain), "gastric ulcer," and "pyloric spasm." According to this table application of cold is supposed to ease the pain in gastric ulcer and to intensify it in pyloric spasm; this is not our experience. There are several omissions—for example, the reticulocytes are not mentioned in connexion with pernicious anæmia nor are Froin's syndrome and the protein content of the C.S.F. in the examination of the cerebro-spinal fluid. The photographs are numerous; many are good, others such as that showing the difficulties of percussion of the heart in the "extremely modest," are quite unnecessary. A photograph of the technique of entering a vein is given showing the operator equipped with a rubber glove, syringe in hand, piercing the dusky skin. The outcome of a close study of this work is that the task of writing a comprehensive book on diagnostic medicine is too heavy a task in modern times. If the author had confined himself to a monograph on the diagnosis of respiratory and circulatory diseases alone he would have achieved more success.

CLINICAL ELECTROCARDIOGRAMS.

Their Interpretation and Significance. By FREDERICK A. WILLIUS, B.S., M.D., M.S., The Mayo Clinic, Rochester, Minnesota. London and Philadelphia: W. B. Saunders Company. 1929. Pp. 219. 36*s*.

THIS book consists essentially of a large collection of electrocardiograms illustrating the various abnormalities which occur in different pathological conditions. Many of these records are interesting, and some are rare, as, for example, those given in the last chapter, which deals with the dying human heart. At least 50 per cent. of the records might have been omitted with advantage, for although good in themselves they are redundant; the remainder would have amply sufficed to illustrate all the points to which the author refers. Apart from a few tables dealing with mortality statistics, the text is of a most elementary character, and falls far below the standard of what might reasonably be expected in a book dealing with such a technical subject. Each chapter is followed by a comprehensive list of references, but these are unselected, and few of the papers to which they refer are even mentioned in the text.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE, September.—This issue is devoted to three papers, each concerned with some form of tuberculosis in industry. In the first B. S. Coleman points out how industry groups the adult community in a way which is convenient for fighting tuberculosis. By medical examinations on engagement, and supervision during employment, the tuberculous can be detected early and their fellows protected from contact infection, whilst industry can also provide for the convalescent that remunerative occupation which is so advantageous to cure.—In the second paper E. R. Hayhurst and his colleagues describe exposure to silica dust in a sandstone quarry in Ohio, where, notwithstanding the presence in the stone of some 95 per cent. silica, the death-rate from pulmonary tuberculosis is low. The evidence of this low mortality, based on statistics, is supported by the result of a careful medical examination of over 900 workmen. Illustrations are given which leave no doubt about the presence of a dust hazard at the quarry, and the puzzle is why the silica dust does not produce its usual effect. A clue may lie in the matrix or bond which holds the silica crystals together; it forms 3 to 8 per cent. of the mass and is composed of ankerite (carbonates of calcium, magnesium, and ferrous iron). At present, however, no other comparable instance can be quoted.—The last paper is by D. E. Cummings, who deals with the separation of particulate matter smaller than screen sizes into graded fractions. He describes a method by which dust particles can be accurately separated one from the other according to size. This method may be of value in preparing material for inhalation experiments. The article is one of a series of studies of experimental pneumonoconiosis.

THE LANCET.

LONDON: SATURDAY, OCTOBER 12, 1929.

THE FUTURE OF VACCINE THERAPY.

THE modern practice of vaccine therapy rests in effect less on any theory of immunity than on JENNER'S success in protecting from subsequent infection with small-pox those who had been vaccinated with material from cow-pox. Indeed, the word vaccine introduced to describe this specific virus is now used in ampler connotation to cover any virus or bacterial body, even any foreign protein, which evokes a response when introduced into an animal body by inoculation. A vaccine has come to be almost synonymous with an antigen. It was PASTEUR who saw in JENNER'S results the germ of a law of general validity—namely, that by causing an animal or inoculated person to undergo successfully a mild infection, protection is thereby obtained from a more severe infection of the same nature brought about naturally or artificially. The results of such active immunisation are essentially protective, and are specific for the virus inoculated. They are limited in applicability when a living virus is used, owing to the difficulty of finding one whose potency is naturally reduced, so that as a rule artificial ways of reducing the virulence must be adopted. Active immunisation by such attenuated viruses is used successfully in the treatment of rabies, and forms the foundation of the methods of producing immune sera in animals.

For use in man any virus, however attenuated, which is still able to propagate itself and thus increase in the site of inoculation or spread throughout the body is dangerous. Bacteria for vaccines in human therapy are therefore at least killed, usually by heat; the bacterial bodies may even be disintegrated chemically, as in detoxicated vaccines. Experiments with such bacterial vaccines, sometimes together with their soluble toxins, have been made in the treatment of human infections for a generation, but so far no therapeutic principles have been evolved that have received general acceptance. The choice of patients suitable for vaccine treatment, the methods of preparing the vaccinal material and of administering it, and the results that may reasonably be expected, even the successes claimed for vaccine therapy, are still debated. Certain facts have, however, accumulated. The body responds to any parenteral introduction of foreign protein by a reaction which may be so violent as to constitute shock, with profound effect on the nervous system, the circulation, and the heat-regulating mechanism. The reaction may be a local one, limited to the site of inoculation, and sometimes a focal one at the site of infection. On the other hand, there may be no apparent reaction. A consideration of experimental work on animals, and of the methods used in fighting animal diseases on a large scale, throws some light on the way vaccines work in therapeutics, if it be granted that the presence of antibodies in the blood gives an indication of the degree of immunity obtained, a proposition not yet established. In animals inoculation, especially intravenous inoculation, on three or four successive days produces a serum with high but evanescent content of antibodies. Vaccines at intervals of some weeks give sera with antibody of long duration. ALMROTH WRIGHT'S opsonic work led to vaccine administration at intervals of several days to avoid a possible negative phase, and to the use of small doses of vaccinal material; his careful immunisation experiments were carried out with the control of the opsonic index. Since this method has lapsed into disuse, no real control is made in vaccine therapy applied to man, except that to avoid active and immediate harm to the patient. Under rather than overdosage is the rule. The tendency, too, is to use less often the bacteria cultivated from the individual, and to depend rather upon stock vaccines. Indeed the specificity of the vaccine employed may be disregarded, as in the use of typhoid stock vaccine for many conditions. Substances other than bacterial bodies may be used, and vaccine therapy then becomes frankly a non-specific protein therapy, the dosage and results being decided empirically. Many laboratory workers refuse to see in the use of vaccines anything more than a specific protection against a reinfection. Pathologists, however, working in close touch with clinicians and with the patient, seem to advocate vaccine treatment in a great number of infective processes. Meanwhile, the practitioner is in a quandary, swayed to and fro by his inadequately controlled clinical impressions, and yet hesitating to omit from his means of treatment anything that is likely to benefit his patient.

Theoretically it should be possible to divide cases of infective diseases into three groups. In the first the patient is doing well, the infecting forces are being dealt with adequately by the natural resistance, and no anxiety about the outcome need be felt. In the second group the infection is localised, but there is a state of unstable equilibrium between the resistance of the patient and the infection which at any time may be upset. Thirdly, there is the group in which the patient is doing badly and is being overwhelmed by the infection. The first group obviously needs no specific treatment in order to ensure recovery. In the third group a procedure bringing about further toxic effects is not to be contemplated lightly, and adding more poison may be actively harmful. It is probable that in the developments of the new chemotherapy there will be found a better means of treatment for such cases. It is only in the second group, where there is already some degree of resistance, that the possibility of stimulating that resistance and calling up further antibodies to the infecting germs by injecting vaccines should be considered. (In hydrophobia immunising treatment is begun after infection takes place, and completed before symptoms of the disease show themselves; but this is essentially prophylactic treatment, which is not now under discussion.) In this group of cases, where symptoms have already appeared but progress is delayed and resistance is inadequate, or is liable to break down at any time, medical vaccine therapy is largely used in practice, and the success of this method of treatment has been assessed differently by various observers. The scientific basis for it has not been demonstrated; the advocates of vaccines in treatment base their claims upon the evidence obtained by clinical judgment. Evidence in support from the experimental side is wanting, but this may well be due to the fact that investigators of the problems of immunity have been working on other lines. Even the

site of antibody formation is still largely a matter of conjecture, and the whole problem of immunity has changed its aspect many times within the last 30 years and is still quite unstable. The nebulous views of resistance to infection held by earlier pathologists were succeeded by the coördinated idea of phagocytosis established by METCHNIKOFF. In its original form the phagocytic properties of the wandering white cells of the blood were regarded as the means by which the body dealt with infecting bacteria. With the extension that the fixed cells of the lymphatics, connective tissues, and endothelium also exhibit phagocytic and thus protective properties, METCHNIKOFF'S idea remains the basic principle of the theory of immunity of the present day. EHRLICH introduced another idea, that the humours of the blood and body fluids carried antibodies of various kinds, which either were antibacterial and antitoxic in themselves, or stimulated the phagocytes and prepared the bacteria for ingestion. These antibodies were represented as actual substances in the blood. The theory was amplified to include any new phenomena observed, and at last became a maze of incomprehensibly involved patterns. A simplification followed, and M. NICOLLE saw in the immunity processes alternative phases of coagulation and lysis. Now recent advances in physical chemistry show that colloids are susceptible of precipitation by electrolytes, and that one colloid may act on another sometimes in a protective or stabilising way, sometimes sensitising it, so that it becomes more easily precipitated. According to this physicochemical theory the changing conditions of the colloids of the blood and tissues are responsible for the phenomena observed in the process of immunisation, and there are not various antibody substances in the blood of an immunised animal, but phases of one immune reaction. This may be an over-simplification. Certainly in this theory there seems little room for specificity; whereas the immunity response consists essentially of a highly specific action combined with a non-specific general reaction. No satisfying explanation is yet forthcoming of the curious mixture of resistance and sensitiveness that occurs in immunity. Lately, too, our ideas on the variation of bacteria, not only in virulence but even in physical characters and appearance in cultures, have undergone considerable extension. Much ground remains to be covered, therefore, before a satisfactory basis for the use of vaccines in the treatment of infection can be reached. It is the time neither for complacent scepticism nor for violent advocacy, but for open-minded discussion that will stimulate further research.

THE MECHANISM OF COMPENSATION FOR SILICOSIS.

EACH new step in granting compensation for disability due to occupation seems to require new procedure. If disability is due to an accident, the workman carries a disputed claim into court, where after medical, as well as other, evidence has been heard the issue is decided. If a scheduled disease is concerned, medical evidence is heard and assessed by a medical referee, whose decision is final. In recent years compensation has been granted for a disease—silicosis—in connexion with which existing procedure is inapplicable. Schemes have been tried out in the small refractories industry during the past ten years; but in the last 12 months compensation has been granted widely, so as to cover practically all industries in which a silica-dust hazard exists. These industries include the getting and use of sandstone, whether for road metal, building, monumental masonry, or grinding metals; the production and use of powdered flint, whether in the pottery trade or for the making of silica paints, abrasive soaps or vitreous enamels; and the fracture of quartz and quartzite in the granite industry or in the process of tin mining. This extension enlarges the scope of compensation for silicosis from some 3000 workmen to a large population, of which the size is uncertain; but it numbers anything from 50,000 to 100,000. This population is scattered all over the country, but is more densely grouped in certain industrial areas, such as the gritstone district of Derbyshire, the pottery towns of Staffordshire, and the cutlery centre at Sheffield. The problem to be faced differs from that tackled with such success in the gold-mining industry on the Rand, where only about 10,000 European miners are employed, both in the numbers concerned and their wide distribution over many varied industries.

A departmental committee, under the chairmanship of Dr. J. C. BRIDGE, senior medical inspector of factories, was appointed in December of last year to consider what medical arrangements should be made to cope with the situation. Their report[1] has just been issued. They envisage plans in which the medical services required for controlling the occurrence of the disease, such as examination on engagement and periodically thereafter, are combined with those needed for diagnosing the disease for compensation purposes. The final recommendations of the committee are modelled on the scheme which has achieved success in South Africa, modified to meet our more complicated conditions. They include the creation at different centres of medical boards, each consisting of not less than two whole-time experts, who will visit factories, quarries, and mines to carry out their duties, which may be greatly facilitated in country places by the use of efficient mobile X ray apparatus. It is proposed that a chief medical officer should be appointed to coördinate and standardise the work of all the boards; he would reside at a central bureau, probably at Sheffield, where research would be organised and pursued. The expenses involved are to be borne by the industries concerned, which will contribute to form a joint general compensation fund, as the refractories and sandstone industries have already done. The wisdom of adopting this South African precedent is seen by referring to the latest report from the Rand,[2] which tells how the production-rate of simple silicosis on the Rand is now declining year by year in an entirely satisfactory way. It tells also how this has resulted from minimising, first, the dust hazard, and then exposure to tuberculous infection; and how action has throughout been based upon and checked by exact information disclosed by the Medical Bureau. It tells, in fact, how that preventable associate of tuberculosis—silicosis—can be combated. How great an influence would be exerted upon the prevalence of tuberculosis in Great Britain by the elimination of silicosis can hardly be guessed; but the committee hold silicosis to be far more widespread than is generally admitted. If it is really found to occur in industries and occupations where heretofore its presence has not been suspected, the effect of its control on the incidence of tuberculosis in this country should be considerable.

[1] Report of Silicosis (Medical Arrangements) Committee. London: H.M. Stationery Office. 1929. 6d.

[2] Report of Miners' Phthisis Medical Bureau for year ended July 31st, 1928. Pretoria: The Government Printer. 1929. 6s.

THE DIAGNOSIS OF DISEASE OF THE NASAL SINUSES.

As a rule there is no difficulty in recognising frank suppuration in a nasal accessory sinus, although when several cavities are involved the presence of disease in one of them may be overlooked. But when the discharge is mucoid and scanty, as in the cases formerly called latent, it is often by no means easy to diagnose the presence of pus or to determine which sinus or sinuses are affected. Here radiography is of great service, but is also subject to error, one cause of which is that past disease leaves changes which are represented on the radiogram, and may be indistinguishable from the signs of present inflammation. In the course of the routine examination of asthmatics at the Hospital of the University of Pennsylvania, R. A. KERN and H. P. SCHENK[1] were impressed by the frequent discrepancies between the findings of the rhinologist and the radiologist, and by the fact that such discrepancies were sometimes due to proven error on the part of one or other of these methods of examination. Accordingly, they subjected a series of 200 asthmatics, first to a clinical, and then to a radiological examination of the nasal sinuses, and finally, wherever possible, to an operative investigation. They also had the same examination carried out in a control group of 50 "normal" people, who showed no obvious sign of respiratory disease and no history of sinus disease in the past. Both clinical and radiographic examinations were carried out in a thorough manner, an essential part of the former being the routine use of the nasopharyngoscope. The clinical investigation included irrigation when it seemed necessary, but not a bacteriological or cytological examination of the washings.

Antrum washings, the writers hold, will be returned clear in the presence of antral polyps, thickened diseased mucosa, or inspissated secretion, and hence that the return of clear fluid by no means shows for certain that the cavity is healthy. In this connexion a bacteriological examination of the washings is very helpful; a profuse growth of a pathogenic organism is doubtless proof of the infected state of the sinus, but we think that further research is necessary before it can be accepted that the finding of a few organisms in an otherwise apparently healthy sinus is definite evidence of disease. In the present investigation KERN and SCHENK believe that the large percentage of error shown by clinical and radiographic examination of the maxillary sinus arose because the rhinologist based his diagnosis of "normal sinus" on the return of clear fluid on irrigation. Their conclusions on the results in general may be stated shortly. Neither clinical nor radiographic examination is always reliable, but of the two, radiography is the more sensitive, especially in the study of the ethmoidal and sphenoidal sinuses. Radiography picks up the evidence of past as well as present disease, so a positive finding does not necessarily mean clinically active disease; also, it often overlooks recent acute infection, whereas clinical examination is more apt to overlook chronic disease, especially of the posterior sinuses. Under transillumination past disease, or normal thick bone, may be mistaken for active disease, and, on the other hand, polypi or mucoid secretion may transmit light normally; both clinical and radiographic methods should, therefore, be employed, neither being relied on alone. KERN and SCHENK consider that in asthmatics a positive finding by either method not only justifies, but indicates opening of the sinus suspected. A very high incidence of sinus disease (80·5 per cent.) was found by radiography in their series of asthmatics, while clinical methods showed 67 per cent. But the incidence was also very high in the control "normal" group, 72 per cent. being diagnosed by radiography as having one or more infected sinuses, and 26 per cent. by clinical examination. This group was not, of course, examined by operative methods.

These figures may be taken to show that inflammation in the nasal sinuses produces permanent change which is demonstrated by radiography, and it also shows that affections of the sinuses are very common in the neighbourhood of Philadelphia. So far as we know, no data are available on the incidence of sinus disease among so-called "normals" in this country. This might usefully be investigated. Sinus infection has, however, been recognised as an important cause of chronic nasal catarrh in children, a view set out by Dr. DAN MCKENZIE in the course of a discussion summarised on p. 772. He places little reliance on skiagraphy or on transillumination in excluding this condition in children, relying rather on puncture when the maxillary antra come under suspicion. Contributing to the same discussion, Dr. P. WATSON-WILLIAMS remarked that the sphenoidal and ethmoidal cells should be examined in even quite young children. For the treatment of antral disease in children, Mr. F. P. GILHESPY considered a pernasal antrostomy the appropriate method, and this method is also advocated by Mr. HAROLD BARWELL in a paper recently read before the Section of Laryngology of the Royal Society of Medicine.[2]

[1] Amer. Jour. Med. Sci., August, 1929, p. 168.

[2] Journal of Laryngology, October, 1929, p. 674.

Annotations.

"Ne quid nimis."

THE SALE OF ARSENIC.

"THE unrestricted sale of arsenic," declared Parliament in 1851, "facilitates the commission of crime." This incontestable declaration, which formed the brief preamble to the Arsenic Act of that year, is nowadays almost daily illustrated by a succession of inquests and criminal trials, investigating suspected cases of poisoning due to the use of arsenical sheep-dip or weed-killer. After the sensational Greenwood case in 1920, the Pharmaceutical Society drew public attention to the possible advisability of altering the conditions under which these poisonous substances were supplied and used. More recently experts have declared that alternative non-poisonous preparations are available, and that the time has come to prohibit altogether the use of arsenic for agricultural and horticultural purposes, rather than to continue the present dangers of benevolent toleration. A recent article in the *Solicitors Journal* criticises the defects and anomalies of the existing law. The restrictions imposed by the Arsenic Act of 1851 were valuable. They insisted on the colouring of arsenic before sale; they forbade sale to persons unknown or under age; and they required the particulars of each sale to be entered in a book, and to be signed by the salesman, and (if he could write), the purchaser. The Act did not apply to arsenic in prescriptions by a legally qualified medical practitioner, or—whatever distinction the words may import—"a member of the medical profession." The Pharmacy Act of 1868 introduced a general control of the sale of arsenic and other scheduled poisons (the list of which has been extended

from time to time), by restricting to registered chemists the power to sell, by prohibiting sales to persons unknown or not vouched for, and by requiring entries of sales to be made in a Poisons Book. No doubt it was deemed right that a dangerous poison should be sold only by a qualified chemist, who would use his skill and judgment in warning the purchaser of the nature and quality of the drug supplied. In 1908, however, came the important relaxation which has enabled ironmongers, storekeepers, and other unqualified persons all over the country to sell arsenic freely. Section 2 of the Poisons and Pharmacy Act of 1908 declared that the restrictions of the 1868 Act were not to apply to poisonous substances containing arsenic, tobacco, or tobacco alkaloids sold for agricultural and horticultural purposes, provided that the seller was duly licensed by the local authority and that he observed the prescribed regulations. The obtaining of a licence seems to be a mere formality; the renewal of a licence is an easier process still. Regulations of 1909 require that sheep-dip and weed-killer must be kept in a separate drawer or closed receptacle, apart from other goods, and must not be sold at the same counter as food for human consumption. Regulations of 1920 (replacing earlier requirements) add that the poisonous substance must not be sold except in enclosed vessels or receptacles as received from the manufacturers, secured from leakage and labelled with the name and purpose of the substance, the word "Poison," and the seller's name and address. These rules are excellent so far as they go; but the law places no restriction on the storage or possession of arsenic in this form, nor is there any prohibition on sale to persons under age. Thus, as our legal contemporary observes, a chemist may not sell half an ounce of powdered arsenic to a youth under age who wants it for killing rats; but a corn-dealer may sell a gallon of liquid arsenic, or a pound of powdered arsenic made up into a packet and called "weed-killer," to any boy of 16 whom he knows, and who says he wants it for killing weeds in his father's garden. Further, it appears that even unlicensed persons are often found offering weed-killer for sale, either in ignorance of the law, or in the mistaken belief that any tradesman may sell these goods if they are supplied in the original package sent out by the manufacturer. The time seems ripe for reconsidering whether arsenical preparations are so indispensable in the garden, or on the farm, as to justify the exception made in their favour in 1908, and also whether the conditions of their supply and use are not, in any case, too free from control. It may be said that the public is weary of incessant restrictions, and that a would-be murderer will always manage, somehow, to equip himself for his nefarious purpose. The present laxness of the law, however, is in marked contrast with the retraints imposed by statutes in 1920 upon the possession of firearms and of dangerous drugs. It would be instructive to have statistics of the proportion of poisoning cases in which the obtaining of arsenic in the form of sheep-dip or weed-killer has "facilitated the commission of the crime."

THE BROAD TAPEWORM IN NORTH AMERICA.

THE past year has added considerably to what is known of the distribution and hygienic significance of the plerocercoid of *Diphyllobothrium latum* in the region of the great lakes of North America.[1] This stage is by no means restricted to the Michigan Peninsula. Infected fish have been reported by T. Vergeer[2] from Lakes Winnipeg, Manitoba, Nipigon, and Winnipegosis, from Lac la Biche, and from the Lesser Slave Lake; while H. E. Essex[3] has proved that *Cyclops brevispinosus*, *C. prasinus*, and *Diaptomus oregonensis* act locally as first larval hosts. It must be emphasised, however, that man is not the only definitive host of this cestode. There is, for example, a moderate infection of fish in the smaller Canadian lakes far from towns. In these parts, when Indians or white men while fishing for trout catch wall-eyes and great northern pike—fish constantly infected with the plerocercoids—such unwanted fish are fed raw to dogs, of which every man seems to have at least one, and some a pack; and the dogs are readily infected, as many as 19 parasites having been found in one animal.[4] Moreover, the broad tapeworm has been reported from the fox, *Vulpes fulvus*, and from the domestic cat. The grey wolf, lynx, mink, marten, racoon, and otter feed on fish, and Vergeer has readily infected the cinnamon bear, which in the spawning season has been known to scoop as many as 20 fish out of the water on to the bank before starting his meal. Man is thus but one of a number of definitive hosts used by *D. latum*, and that he cannot be the main one is shown by Vergeer's calculation[5] that the United States imports yearly from Canada upwards of 6,000,000 plerocercoids hidden in fish, while only about 200 cases of human infection have ever been reported from the United States. The risk to man can hardly be considered great enough to justify that ruining of an important industry, with great loss to concerns dependent on it, which would follow the exclusion of Canadian fish from the United States. Careful disposal of human sewage is evidently insufficient to prevent infection of fish, but man is readily and fully protected by the cooking of his fish food, and woman will lose her preponderant tendency to infection when the Jewess gives up her habit of tasting raw fish to test her skill in flavouring it.

[1] See THE LANCET, 1928, ii., 337.
[2] Canad. Med. Assoc. Jour., 1928, xix., 692.
[3] Jour. Parasitol., 1927, xiv., 106.
[4] Jour. Amer. Med. Assoc., 1929, xcii., 607.
[5] Jour. Infect. Dis., 1929, xliv., 1.

PECTOSE AND ITS ALLIES.

THE class of substances, known as the pectins or pectic compounds, which occur in apples, pears, and other fruits as well as in such roots as turnips and carrots, form a valuable stand-by for the jam maker, and this circumstance has brought them within the purview of the Food Investigation Board. Mrs. M. H. Branfoot (née Carré), the author of a study[6] made on behalf of the Board, has herself contributed greatly to the clarifying of our knowledge of these obscure substances to which over 300 workers have directed their attention during the last 100 years. The essential difficulty of studying the pectins is that they are uncrystallisable, they form no well-defined compounds, they are difficult to purify, and chemically they seem to lead nowhere; and this in spite of the fact that such skilled workers as Regnault, Cross and Bevan, Winogradsky, and other well-known botanists and chemists have sought to clear up their relations. Braconnot seems to have been the first to realise (in 1825) that these bodies existed, but Frémy first described (in 1840) the parent substance, pectose, as an alcohol- and water-insoluble body associated with cellulose in the cell-walls of plants, but chemically very unlike cellulose. Later workers found pectose difficult to isolate in an unchanged state; acids and alkalis may dissolve it with production of pectin and pectic acid, but they also change it. Pectose, indeed, appears from the work of Fellenberg and Carré to be formed by the union of cellulose with pectin; acid hydrolysis resolves it again into its constituents. Ehrlich concluded that the natural pectin of plants may be conceived as a complex anhydro-arabinose-galactose - methoxy - tetra - galacturonic acid. The replacement of a variable number of methoxy-groups by cellulose may be supposed to confer insolubility on the complex, which would be hydrolysable to varying degrees by acids and alkalis, or by other hydrolysing agents such as the natural enzymes found in plants. Having regard to the difficulty of ensuring that one is dealing with a chemical individual, it is not surprising that such

[6] A Critical and Historical Study of the Pectic Substances of Plants. H.M. Stationery Office. Pp. 154. 3s. 6d.

different empirical formulæ as $C_{28}H_{42}O_{24}$ and $C_{64}H_{48}O_{64}$ should be attributed to pectins from different sources. Mrs. Branfoot, after fully discussing the matter, concludes that pectin is a neutral methoxy-ester of pectic acid, represented by the formula $C_{39}H_{58}O_{33}$, and yielding 11·76 per cent. of methyl alcohol, whilst the basal molecule of fully de-methoxylated pectic acid is $C_{35}H_{50}O_{33}$, with a characteristic calcium content of 7·66 per cent. Intermediate tri-, di-, and mono-methoxy forms appear to exist, the jellying power, according to A. G. Norman, diminishing with the number of methoxy groups. Laboratory methods for the extraction and determination of pectic compounds from fruits and other vegetable products are described in this study, as well as commercial methods useful for the maker of jams and fruit jellies who wishes to stiffen his products, and so to avoid the troubles of the housewife whose jam will not set. The use of these products is specially called for when fruits deficient in pectose, like apricots, pineapple, and strawberries, are concerned. This practice is vigorously defended by the author who has made a particular study of the apple, following the changes of pectose into pectic acid, cellulose and methyl alcohol via pectin and the pectinic acids during ripening and the disappearance of these substances during rotting. The changes are made visible by staining sections with ruthenium red and other appropriate dyes. The monograph should appeal to the plant physiologist as well as to the fruit preserver and to the flax retter whose interest in pectic substances is confined to getting rid of them.

THERAPEUTICS FOR STUDENTS OF PHARMACY.

THE large number of words derived from the Greek *pharmakon* must be a puzzle to the lay mind; some refer to the doctor and his art, others to the pharmacist and his craft. But the line of pharmacy for the chemist, and pharmacology and therapeutics for the doctor, is one overstepped on both sides, and one which must be overstepped in training, at any rate, if a sound and liberal education is to be given. The strife which sometimes arises between doctor and chemist is not over what each learns, but what each practises. The professor of pharmacology and chemistry in the University of Washington has deliberately decided to write for the student pharmacist a text-book[1] on pharmaceutical therapeutics, including in his sub-title "with pharmacology." The book is eminently readable, running smoothly to the English ear; its general arrangement is therapeutic, according to the bodily system for which the drugs are most frequently applied. In his preface Prof. Lynn sets out a reasoned and, it seems to us, a reasonable defence of his action. There are, he tells us, a number of modern and very satisfactory books on pharmacology and toxicology for the medical student and practitioner, but no one has attempted to present, for the pharmacist, such a field in simple manner with general but without a practical therapeutic application. It is this gap in general therapeutic teaching which the writer wishes to fill, for the teaching of pharmacy is otherwise difficult. In describing each drug he considers the physiological actions most important in the treatment of disease and most significant in the diagnosis and treatment of poisoning. The principles of its therapeutic employment, which are closely associated with these actions, are given in outline without any attempt to describe the practical application. Therapeutic information is supplied for students of pharmacy and for their education rather than for their practice.

The danger of imparting general information to those who are not meant to apply it cannot have been overlooked by Prof. Lynn. The temptation to prescribe for such common ills as headache, constipation, and general debility is seldom resisted by the pharmaceutical chemist when pressed by a customer dissatisfied with his medical attendant or reluctant to pay a fee. If the pharmaceutical chemist is more interested in the purpose than in the technique of his profession he will study therapeutics with zeal and may find irksome the limitation of his life-work to the dispensing of remedies prescribed by others. It must be remembered, however, that the status and responsibilities of the chemist vary in different lands and in different epochs—for example, in France his profession stands exceptionally high. In Great Britain, too, there are signs of the expansion of opportunities in pharmaceutical chemistry, since the laboratories of the Pharmaceutical Society of Great Britain and Ireland have, in recent years, taken on important new duties. It is, however, mainly in one direction of therapeutics that the modern student of pharmacy is enlarging his experience; the many biological remedies now on the market are being standardised year by year according to methods which require special training, and an entirely different outlook will be demanded in future years if the increase in the number and popularity of these remedies is sustained. The curriculum of the student of pharmacy is likely to become almost as crowded as that of the student of medicine. Whether there is room for therapeutics, even in its most general sense, remains doubtful.

[1] Pharmaceutical Therapeutics with Pharmacology, Posology, and Toxicology. By Eldin V. Lynn, Ph.D., Professor of Pharmacology and Chemistry, University of Washington, College of Pharmacy, Seattle. London: McGraw-Hill Publishing Co., Ltd. 1929. Pp. 431. 20*s*.

ENOUGH BUREAUCRACY AND NOT TOO MUCH.

A SPEAKER who last week addressed the Law Society's meeting at Bournemouth on the Rise of Bureaucracy chose as one of his supreme examples the departmental order which requires a cowman to wash his hands before milking. Bureaucracy is undoubtedly a grave disease of the body politic. Lord Hewart has forsaken his judicial detachment to attack it as the "new despotism"; Lord Wolmer has been exposing the defects of a nationalised post-office; the medical profession knows its own troubles in the departmental aspects of health insurance and in the Statutory Rules and Orders about the supply of dangerous drugs; many members of the public have their favourite instances of petty restrictions tolerable only in war-time, and of official tactlessness and stupidity. But are there many champions of the ancient liberties of England who are anxious to go to the stake on behalf of the right to supply dirty milk? The direct legislation of Parliament specifically enacted that Milk and Dairies Orders should—amongst other things—prescribe the precautions to be taken for protecting milk against infection or contamination and for preventing danger to health from the sale of infected, contaminated, or dirty milk. Accordingly, the Order of 1926 directs that any person engaging in the milking of cows or the distribution of milk shall keep his clothing and person in a cleanly condition, and that all cowkeepers shall see that the hands of the milker are thoroughly washed and dried before milking—with other precautions for the same purpose. It is true that this adds to the list of crimes which sufficed Elizabethan England, and that prosecutions for dirty hands may encourage lawyers to take nice points as to the exact meaning of "thoroughly washed." But if the country wants clean milk Parliament must require the observance of elementary precautions, and the Ministry of Agriculture must frame certain minimum standards. Parliament might, of course, legislate about such details itself instead of delegating its authority to a department; but Parliament is one of the worst possible bodies for legislative purposes; it is too big and too busy to attend to details. As for the loss of personal freedom which the Bournemouth speaker's instance involves, there are copious parallels in other fields of public health. Where an individual's act or neglect can imperil the health and safety of others he may have to surrender something of his

freedom. The notification of infectious disease, quarantine, vaccination, the cleansing of verminous persons, and the detention of the insane—all these have elements of interference and compulsion which are familiar in our Public Health Acts and in the even more stringent variants of local legislation. If, in a matter like milk-supply, the choice lies between the Bournemouth speaker's remedy of laissez-faire and the Ministry of Agriculture's Order, the public may swallow a small dose of bureaucracy with no ill-results.

CONCERTED STUDY OF TUBERCULOUS INFECTION.

MANY of those who write in praise of team-work in research have never tried it; the research mind can only rarely be harnessed in a team. There are quick workers and slow, intuitive thinkers and plodders who add one to one with painstaking care, men whose gifts lie in manipulative skill, and those to whom technical laboratory work is an abhorrence. No doubt each individual can find work suitable to his needs, given the opportunities, but thrice blessed is he who can bring them together into an efficient and harmonious team. Such is seen in the record of a decade of work by a team of American investigators, organised by the Kenneth Dows Research Fund of Johns Hopkins University and Hospital, and published in a limited edition regardless of cost.[1] Each research is an entity in itself, but each bears upon the rest; all the papers have appeared from time to time in the *American Review of Tuberculosis* and an interval of seven years separates the first from the last. Throughout these studies the workers have had the advantage of the use of a culture of human tubercle bacilli isolated by Trudeau at Saranac in 1891. At the time of isolation it exhibited what might be called standard virulence for guinea-pigs, but after two or three years of incubator existence it underwent a noticeable diminution of virulence. This diminution proved, as time went on, not to be progressive to a vanishing-point, and the strain has retained a certain degree of infecting power for guinea-pigs, which has not changed during the last 20 years. Its newly acquired, though lessened, infectiveness has become a fixed and static property resisting all ordinary methods that have been aimed at changing it. The studies were designed primarily to elucidate two main problems in tuberculosis immunity—viz., the part played by the lymphatics in the localisation of tuberculous disease, especially in its chronic pulmonary form, and the mechanism by which this localisation favoured the development of the immunity processes. Early in the story comes Dr. W. S. Miller's study on the normal histological distribution of the lymphatics of the human lung, followed by his wax reconstruction models of a single tubercle in the lung, which enable the observer to visualise in three dimensions what he has hitherto only looked at on a plane surface. These models are probably unique. Then follow researches on the vascular supply and lymphatics of the lung of the guinea-pig and the rabbit by Dr. Miller, Dr. Krause, and Dr. H. S. Willis. Each research emphasises minute points of difference between these two animals which to the uninitiated might appear to be of no practical value whatever; but in subsequent papers the picture of lymphatic mechanism is built up to show that these differences are not devoid of meaning. Dr. Krause makes it clear that, although the tracheo-bronchial lymph nodes of the rabbit are small and unimportant, the intrapulmonary lymph tissue is large in amount and is supplied by blood from the pulmonary artery; consequently when intravenous infection with tubercle bacilli takes place, an intra-pulmonary fixation of the bacilli by these lymph nodules follows. Here the anatomical distribution of the lymph nodules determines the focalisation of the disease. For the same reason the presence of large tracheo-bronchial glands in the guinea-pig determines the early localisation, in this case not in the lungs but in the hila. From this point Dr. Krause goes on to show how foreign particles passing through the lungs may be "embolised." If they are arrested there, they may remain in situ or they may be conveyed into tissue spaces and thence to the intra-pulmonary lymphoid tissue as in the rabbit, or the hilum nodes as in the guinea-pig. Again, therefore, it is seen that the lymphatics are the determining points of focalisation. But not only do they focus infection, they control the rate of the dissemination of tubercle bacilli from the portal of entry onwards. In the normal guinea-pig dissemination takes place within three hours; in the immune pig, after subcutaneous reinfection with a virulent strain of bacilli, a great delay occurs in the transmission of tubercle bacilli from the point of entry to the customary places of localisation within the body takes place. The outstanding feature is not complete inhibition but retardation. This work on the lymphatics of these two animals, which are so frequently used in laboratory experimentation, is a valuable contribution to the pathology of tuberculosis. The importance of the lymphatics in the spread of this disease through the body has been recognised by all pathologists since the days of Sylvius, but the fact that variations in the lymphatic distribution in different animals might be responsible for so much variation in the pathological picture has hitherto not been clearly recognised. Its bearing upon the morbid anatomy of human tuberculosis is obvious. Finally, the work of Dr. Krause and Dr. Dorothy Peters suggests the existence of two factors in this mechanism—namely, tissue allergy and immunity. The allergic reaction is called into play by the tissue contact of immune animals with dissociated tuberculo-protein or with tubercle bacilli, and this is followed by an accelerated development of the characteristic nodular tubercle.

[1] Studies on Tuberculous Infection. By Allen K. Krause, William Snow Miller, and Henry Stuart Miller Kenneth Dows Tuberculosis Research Fund," Johns Hopkins University, Baltimore.

THE HEALTH OF SEAMEN.

THE Seamen's National Insurance Society is an organisation bound by its constitution to accept every seaman who applies for membership without regard to his age, state of his health, or any outside consideration. The membership is not of a specially selected class, and for this reason some figures set out at the annual meeting held in June last and now published in the report of progress for 1928 are of interest. Throughout the eight years ended in December, 1928, on the average 12 per cent. of their members received sickness benefit, but in both 1927 and 1928 the number represented 15 per cent. Detailed examination of the records does not indicate any exceptional causes for this increase in sickness. In 1927 influenza had a marked effect, but in 1928 the number of influenza cases was below the average. A more encouraging feature is the low incidence of tuberculosis and venereal disease. The membership of the Society as certified by the Ministry of Health has averaged a little under 60,000 during a period of 16 years, and the cases of tuberculosis have averaged little over 100 a year during this period. During the last eight years the deaths from tuberculosis have averaged one-seventh of 1 per cent. per annum. In the same period the known incidence of venereal disease has also been small. The Society's doctors have treated rather less than 150 cases a year, this number including members who have received medical benefit after being eligible for sickness benefit. The cases of venereal disease, as far as can be ascertained, represent one-fourth of 1 per cent. of the members of the Society. Sir Norman Hill, the chairman, in announcing these figures said that he believed them to present a very different picture from that drawn from other sources, but he knew of no grounds upon which their accuracy could be questioned. As regards tuberculosis there could be no possible reason for

underestimate. Indeed, the Society was entitled to get substantial help from the local authorities in every proved case. He made no claim that the figures shown by the Society's records are generally applicable to all seamen, and put them forward only to suggest that those figures derived from other sources require closer investigation than appears to have been given them. Among the difficulties of assessing the sickness of seamen is, of course, the impossibility of obtaining reliable estimates of the total number of seamen. An individual may be described as a seaman on very slender grounds, especially in death certificates. The title is often used by those who find only seasonal employment at sea, and may be retained long after the man has left the sea to follow a permanent occupation on the shore.

A TREATMENT FOR EMPYEMA IN INFANCY.

EMPYEMA is still a very dangerous condition in infancy. In the United States, Spence [1] in 1920 found in a total of 204 cases that the mortality was 64 per cent. in the first year and 50 per cent. in the second. Cameron and Osman's [2] figures in this country three years later are in close agreement with Spence's, showing 66 per cent. mortality in the first year and 50 per cent. in the second. Of many methods advocated as means of reducing this high death-rate, one which has found favour on the continent is the use of optochin, a preparation of ethyl-hydrocupreine hydrochloride which has been shown to have an inhibiting effect on pneumococci in vitro. Woringer,[3] of Strasbourg, employs it as follows. As much pus as possible is aspirated from the chest, and a 5 per cent. solution of optochin is then injected into the pleural cavity in a dosage of 25 mg. per kg. of body-weight, the total dose not exceeding 500 mg. (10 c.cm.). This procedure is repeated three or four times at intervals of one to two days, and it is stated that the general condition of the child usually improves and the fever diminishes. If not, a second course of injections may be given and even a third or fourth. Some authorities, after aspirating the pus, wash out the pleural cavity with 100–200 c.cm. of a 0·5 per cent. solution, but Woringer is opposed to this on the grounds that it may cause shock and death. He has treated 36 children by his own method and 24 of them recovered completely. Five were operated on secondarily and successfully—and in the light of later experience he thinks unnecessarily—and there were six deaths. The mortality in the first year of life was 29 per cent. (7 cases) and in the second year 36 per cent. (11 cases). Eighteen children over the age of two were treated without a death. Optochin is said not to have any effect on the staphylococcus or streptococcus, and its action is purely local. After the first injections pneumococci are still present in the pus and stain by Gram's method, but it is stated that they will not grow in culture. Fever sometimes recurs as a result of pocketing and if this happens each pocket must be injected separately or the pneumococci, deeply embodied in fibrous deposits, may soon recover their virulence. Hence in Woringer's opinion no case should be pronounced cured until fever has been absent for several weeks. The pus disappears usually in two or three weeks, and radiography shows that even big masses of fibrinous deposit may be entirely resolved within five or six months. But since optochin has been found dangerous when injected intravenously in pneumonia it may well be asked whether there is any risk in introducing it in the pleural cavity. To this question Woringer replies that he has never seen any bad effects from its employment in the dosage recommended, and he even suggests that in some resistant cases the concentration should be cautiously increased from 25 to 50 mg. per kg. It is, of course, difficult to say how far any benefit from the treatment recommended is attributable to the repeated aspiration of pus. Woringer himself does not hold that the use of optochin will supersede operative measures, but he thinks it may be very useful, especially perhaps when it is desirable to defer operation owing to the coexistence of pneumonia and empyema.

[1] Spence, J. L.: Amer. Jour. Dis. Child., 1920, xx., 545.
[2] Cameron, H. C., and Osman, A. A.: THE LANCET, 1923, i., 1097.
[3] Woringer, Pierre: Rev. Franç. de Péd., Feb., 1929

EPIDEMIOLOGY IN ICELAND.

ACCORDING to a correspondent who has lately visited Iceland, and whose paper is concluded on p. 801 of this issue, "There are many striking differences in the behaviour of diseases in Iceland and other countries. A study of these differences might well throw important light on the ætiology of these diseases." As examples it may be noted that tuberculosis, which is declining in most civilised countries, is increasing in Iceland at rather an alarming rate. Poliomyelitis, on the other hand, according to the data supplied, seems to be clinically milder than when it is epidemic in similar environments such as rural Sweden—in spite of the fact that the high morbidity for such a small country suggests that the virus is spreading in an unsalted population. Islands have often been a fruitful field for biological research, as is well brought out by Russel Wallace in his classic "Island Life," because an insular environment permits the segregation, preservation, and evolution of fresh varieties of organisms, including man and microbe. In epidemiological research isolation is a tremendous asset, if not an essential requirement, since the factors involved are so numerous and complex that in areas where continual intermigration is going on between the hosts and parasites of neighbouring areas, the problems become almost hopeless of solution. This shows the importance of another noteworthy remark in our correspondent's article. "In such an isolated and sparsely populated country," he says, "an invading germ can be followed almost visually, as it passes from one lone homestead to another." From this it appears that Iceland is an ideal hunting ground for the epidemiologist. Of recent years, however, it has become more and more clear that epidemiological research, if it is to produce any useful results, must be prolonged over many years, and include extensive studies of the healthy as well as the afflicted, during inter-epidemic, as well as epidemic, periods. Ideally, at any rate, such research requires a team of medical ecologists which include among them clinicians, statisticians, bacteriologists, and (last but not least) a general biologist. Governments rarely care to subsidise such expensive and lengthy academic studies, which are unlikely to produce a visible or immediate return for their money. But should some great scientific organisation, such as the Rockefeller Foundation, be looking for promising material for epidemiological research, it almost seems as if Iceland, with its highly educated population, its learned medical men, and its natural geographical advantages, is the most promising field left in the world. The time is now or never; for as transport and intermigration become more rapid, frequent, and extensive every year, it will not be long before Iceland loses its unique character as a potential key to the mechanism of epidemics.

REGULATION OF THE DIABETIC DIET.

NOWADAYS a large proportion of patients take an interest in their own complaints and try to understand them as far as they can. Dissatisfied with the diagnosis of "an internal inflammation," they wish to know if their ulcers are gastric or duodenal and are often able to argue at length about the relative merits of medicinal treatment and a short-circuit. When this attitude leads to self-prescribing and treatment, pitfalls inevitably open before patient and doctor, but so long as it only means intelligent coöperation it may be valuable to both of them. Diabetes is perhaps the outstanding example in which

such coöperation is important, and several manuals and sets of tables have been published for the use of patient and practitioner alike. The latest contribution is a "Diet Summary in Average Servings for Diabetics," [1] by Dr. P. J. Cammidge. The basis, as the title implies, is a standard diet made up of helpings of food as they appear at the table. From this the diet for any particular patient is determined by a process of trial and error controlled by the usual examinations of blood and urine. The main articles of diet are grouped under the headings of protein, carbohydrate, fatty and miscellaneous foods. Average helpings are given in ounces and the relative amounts of protein, carbohydrate, and fat are set out in grammes and also in "rations." The "ration" is an arbitrary unit which has been found to facilitate working; 20·0 g. of protein = one protein ration (P.R.), 5·0 g. of fat = one fat ration (F.R.), and 4·0 g. of carbohydrate = one carbohydrate ration (C.R.). Thus the average serving of boiled cod is 3½ oz. containing 20·0 g. of protein and 0·2 g. of fat, and forms one protein ration. The tables offer a ready means of varying a diet within the limits laid down. A patient taking, say, six carbohydrate rations at a meal may have it in any one of the following forms, each one of which is regarded as an average helping: ¾ oz. sago, 1 oz. wheat flour or macaroni, 2 oz. chestnuts, 4 oz. potato, 5 oz. broad beans, or one average sized pear (5½ oz.), banana (7½ oz.), or apple (7½ oz.).

While this summary is apparently written in the first place for the use of medical men, it is one which could be handed with advantage to any intelligent patient if his diet had first been stabilised and if any experiments or alterations were made under supervision. The tables have been carefully compiled; they are practical and simple, and they should prove of real help in relieving the monotony of the ordinary diabetic diet. In the necessarily condensed introduction are several controversial statements. It will not be generally accepted that actual appeal to the balance is rarely required after a little practice. This may be, and often is, true in cases on diet only, but in insulin cases, particularly if large doses are required, a check should be made at least once a week even if daily weighing is not necessary to prevent errors creeping in. Discussion is also invited by the statement that if the patient is able to utilise less than 40 to 50 g. of carbohydrate daily, insulin will probably be required. Future editions would be made more useful by the addition of a general index of foods, arranged alphabetically for quick reference to the various groups. These criticisms apart, the brochure may be warmly recommended.

ASPIRATION DURING TONSILLECTOMY.

PULMONARY abscess is a very rare sequel of tonsillectomy but it is greatly dreaded, the more so because it follows a comparatively trivial operation. At one time it was taken for granted that inflammation in the lung was due to the anæsthetic, but its occurrence when local anæsthesia is used shows at any rate that this is not always so. As we pointed out a fortnight ago (Sept. 28th, p. 673) two theories at present hold the field: first, that the complication is a result of inhalation of infected material during the operation; the second, that it is caused by the lodgment in the pulmonary vessels of emboli from the site of operation. In this connexion it may be noted that pulmonary abscess is not uncommon after other operations, notably laparotomy. Our annotation described some experiments designed to test the inhalation theory, and it may be of interest to draw attention now to some other observations whose object was the same. Attempts have often been made to ascertain, by bronchoscopy and by indirect laryngoscopy, what is the quantity of material aspirated and what is its dispersion through the tracheobronchial tree during tonsillectomy under inhalation anæsthesia. Impressed by the inadequacy of these methods, R. V. May, T. W. Thoburn, and H. C. Rosenberger, of Cleveland,[1] have made an elaborate radiographic investigation of 25 patients, aged from 3 to 12 years, during and after the operation of dissecting out the tonsils under a general anæsthetic. The radiopaque material employed was iodised oil and olive oil in equal parts, of which 2 to 3 c.cm. was dropped slowly on to the posterior pharyngeal wall and immediately removed by swabbing. Radiograms of the anæsthetised patient were taken before and after the instillation of the oil, after the dissection of each tonsil, after removal of the adenoids, and six hours after operation. Secretions were removed on gauze sponges, except in two cases where a suction-pump was employed; these both showed aspiration into the bronchial tree. Of the results, 48 per cent., or almost half the cases, showed evidence of aspiration; in all but four cases the iodised oil had been eliminated by the time that the fifth radiogram was taken, after removal of the adenoids, and only one case showed any remaining after six hours. The authors justly claim that the use of skiagraphy in investigating the degree of aspiration during operation is much more informative than the methods previously employed. They conclude that aspiration may be diminished by the adoption of the extreme Trendelenburg position, by constant and thorough removal of all pharyngeal secretions, by a technique producing a minimum of mucous secretion and hæmorrhage, and by a degree of anæsthesia which preserves the irritability of the laryngeal and tracheal reflexes; further, that some degree of aspiration is unavoidable in all operations requiring an inhalation anæsthetic. The investigation does not, of course, decide the question whether pulmonary abscess is caused more often by embolism or by inhalation.

A POST-GRADUATE course for old students of the London Hospital will be held next week from Wednesday (Oct. 16th) until Saturday, and a provisional programme appears in our Medical Diary. Communications may be addressed to Mr. Hugh Cairns at the hospital.

THE Bradshaw lecture of the Royal College of Surgeons of England will be delivered at the College at 5 P.M. on Thursday, Nov. 14th, by Mr. R. P. Rowlands, and the subject will be a Review of the Surgery of the Gall-bladder and Bile-ducts. Students and others who are not Fellows or Members of the College may gain admission by presenting their visiting cards.

As we have already announced, the Harveian Oration of the Royal College of Physicians of London will be delivered at the College by Sir Wilmot Herringham on Friday next, Oct. 18th. Dr. J. A. Arkwright, F.R.S., will give the Bradshaw Lecture on Nov. 5th, his subject being the Virulence of the Micro-organism in Infective Disease. Dr. G. F. Still's FitzPatrick Lectures, on the History of Pædiatrics in the Seventeenth and Eighteenth Centuries, will follow on Nov. 7th and 12th; and the Lloyd Roberts Lecture will be given on Nov. 14th by the Rt. Hon. H. A. L. Fisher, F.R.S., whose subject is An Oxford Movement. The Harveian Oration will be at 4 P.M., and all the lectures at 5 P.M.

DONATIONS AND BEQUESTS.—Among other bequests the late Mr. J. D. Kay left £1000 to the Manchester Royal Infirmary.—Mrs. Polly Wharton, of Brights Cottage, Heckmondwike, left £1000 to the Heckmondwike Urban District Council upon trust to apply the income in defraying the expenses of sending to the seaside poor and sick children resident in the district, and £500 to the Heckmondwike Nursing Association.

[1] A Diet Summary in Average Servings for Diabetics and others suffering from Disorders of Metabolism. By P. J. Cammidge, M.D. Lond. London: Baillière, Tindall and Cox. 1929. Pp. 8. 1s. (6s. per doz.).

[1] Jour. Amer. Med. Assoc., 1929, xciii., 589.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XLVII.

THE MICROSCOPIC EXAMINATION OF FÆCES.

PART II.*—BACTERIA.

THE conditions of warmth, moisture, and pabulum obtaining in the intestinal tract are almost ideal for promoting the growth of micro-organisms, and a great variety of bacteria is to be found in the fæces. They are, however, really outside the body itself, and are to be regarded as essentially saprophytes, although under certain circumstances almost any of them may enter the body and become pathogenic. There are four great groups of bacteria normally appearing in the fæces; the coliform bacilli, the streptococci, the anaerobes, and the acidophile bacilli. The streptococci and acidophiles retain Gram's stain, as do most of the anaerobes, while the coliform bacilli are decolorised by Gram's method. A generation ago Combe advocated the simple staining of a smear of the fæces by Gram's method, and drew inferences from the proportion of bacteria which retained the violet coloration, to those which were decolorised and took up a counterstain. Although this procedure has not led to results of practical application, a variation in the proportion of the bacteria of the four groups named does nevertheless occur, and one of the chief factors influencing this variation is the diet taken by the patient.

Influence of Diet.

The intestinal tract, which is sterile at birth, is soon found to contain bacteria. Normally about one-third of the dried fæces of healthy people on a mixed diet consists of bacteria. During the period of milk-feeding, the acidophile group predominates largely; but with the onset of mixed feeding, the bacterial distribution changes and soon resembles that of the adult, the coliform bacilli becoming the prominent group. The coliform and anaerobic bacilli preponderate with a high protein diet; whilst the *B. acidophilus* is increased on a high carbohydrate diet. Increase of streptococci follows an addition of glucose or cane sugar to the diet, and the numbers of viable streptococci are greater after a saline purge. Elimination of many putrefactive anaerobic bacilli and other proteolytic organisms, and reduction of the coliform bacilli, can be brought about by a lacto-vegetarian diet, with plenty of fruit and green vegetables, especially if lactose be added. Cultures of *B. acidophilus* may be given in milk to hasten the change of flora.

In addition to the normal inhabitants of the bowel, certain pathogenic organisms occur in disease, such as typhoid, dysentery, and tubercle bacilli. These will be dealt with before discussing the conditions under which the normal bacteria may cause disease.

The Typhoid-Paratyphoid Group.

In the typhoid-paratyphoid group of diseases the bacteria may appear in the stools from the first week onwards, and are recovered in one-third to one-half of the cases. Though other methods of diagnosis are more reliable—such as blood cultures during the first ten days, and the Widal reaction after that—culture of the stools is useful as a control. Bacteriological technique has much improved as the result of the experiences of the war; it is now agreed that before a positive finding is reported, the suspected organisms must not only conform to requirements in motility and fermentation of sugars, but also must be agglutinable by a standard serum. *Typhoid* and *paratyphoid* B bacilli, though less common than formerly, occur still in mild epidemics; *paratyphoid* A, an Eastern type, was more often met with during the war, brought by the troops coming from India. These diseases must be notified. The bacilli continue to be excreted in gushes for some time during convalescence, so that several negative reports at intervals should be obtained before the patient returns to ordinary life. Sometimes it happens that a patient, though apparently well, continues to pass enteric bacilli at intervals; he becomes a "carrier," and a source of unwitting infection of the rest of the community. Such a person should be isolated under medical supervision, and should be debarred from any occupation which entails the handling or distribution of foodstuffs. Unfortunately, in these cases, it is often difficult to get rid of the infection, which may continue for a long time in such places as the gall-bladder.

Dysentery Bacilli.

In cases of colitis due to infection with dysentery bacilli, the organisms can be recovered from the mucopus in a large majority of the cases in the acute stages; in chronic cases they are rarely found. Indeed it may well be that bacillary dysentery is always an acute infection, though sometimes quite a mild one; and that a chronic colitis following an attack of dysentery is kept up by non-specific bacteria as a secondary infection. The laboratory report should differentiate between dysentery bacilli of the *Shiga-Kruse* and of the *Flexner-Y* types. The former infection is a serious affair, since the *Shiga* bacillus has a toxic effect on the nervous system as well as on the intestine. Nowadays a good antitoxic serum is available. Infection with *Flexner* dysentery bacilli is milder; it may be troublesome, however, and even fatal in infants, or in elderly or debilitated patients. There are at least five members of this *Flexner-Y-Hiss* and *Russell* type, and no standard serum is available. Eliminative treatment, for example by sodium sulphate, is the best.

A number of bacilli, not true dysentery, but capable of producing colitis, are grouped together as *para-dysentery* bacilli, of which perhaps the best known are *Morgan's No. 1* bacillus in the summer diarrhœa of children, the *Sonne* bacillus associated with dysenteric symptoms, and the *Bacillus enteritidis* of *Gaertner* and *B. aertrycke* in food poisoning. The allied *B. suipestifer* (hog cholera bacillus) is important for animals and probably sometimes for man. There are also others whose claim to be regarded as pathogenic is not yet accepted. These will be dealt with later.

Tubercle Bacilli.

A report of *tubercle* bacilli can only rarely be unexpected. Their presence in sufficient numbers to be detected in a routine examination will occur only when there is gross clinical evidence of chronic bowel trouble. In children with phthisis, in whom all sputum is swallowed so that none is available for direct examination, pus containing tubercle bacilli may be passed in the motions. In suspected cases of intestinal tuberculosis, special methods of concentration with antiformin and inoculation of a guinea-pig may be required.

Cocci.

Staphylococci are not inhabitants of the intestine. When their presence is reported, a local infection of the lower bowel by abscess or fistula-in-ano should be sought for; otherwise it is a negligible contamination from the skin. *Streptococci*, on the other hand, form one of the important groups of the normal intestinal flora, and there are several varieties which may at times be pathogenic. The usual differentiation made is by their action on blood cells, so that they may be classified according as they produce a green pigment, or completely hæmolyse the blood corpuscles, or have no effect upon them. All three classes may be present in fæces. The non-hæmolytic one (*enterococcus*) is the commonest. It is usually not pathogenic, though it is reputed to be so at times, as a secondary infection following ulcerative states of the bowel. A variety of

* Part I., on Cytology and Animal Parasites, appeared last week.

the enterococcus is believed by Bargen to be the causative organism in chronic ulcerative colitis; but this is not generally accepted by pathologists. The other two classes, green and hæmolytic streptococci, may also become pathogenic. If they invade the blood stream or tissues of the body, they may cause severe symptoms, but their presence in the fæces is not necessarily significant.

Other Micro-organisms.

The vibrio of *cholera* may be found in epidemics in the tropics, but does not occur in these islands. *B. pyocyaneus* (the bacillus of blue pus), *B. proteus* (a putrefactive bacillus often found in great numbers in watery offensive stools), *B. lactis aerogenes* (allied to *B. Friedlander*, the pneumobacillus), *B. fæcalis alkaligenes* and *B. pseudoasiaticus* are rather harmless findings in the fæces, though possibly they may become pathogenic at times in other situations.

The other groups of fæcal bacteria, anaerobic and acidophile, as well as the spirochætes and yeasts—except the ray fungus of actinomycosis—are not important so long as they remain in the lumen of the bowel; though it may be expected that as our knowledge of the biochemical products formed by these organisms from food-stuffs increases, there will be some evidence found on which to form conclusions about a possible "intestinal toxæmia."

While one-third of the dried weight of normal fæces consists of the bodies of dead bacteria, these bacteria in the lumen of the bowel are really, as already mentioned, outside the limits of the body proper, and are as unlikely to gain entrance to the body, unless there is a breach in the mucous membrane, as are skin organisms without some damage to the skin epithelium. Such a break in the mucous membrane of the bowel occurs in any abrasion or ulcer, and there is no doubt that a secondary infection of dysenteric and tuberculous ulcers takes place with the ordinary cocci and bacteria of the bowel. Even when the site of invasion is not obvious, we know that a septicæmia with colon bacilli may occur, and that these are often excreted by the kidney causing irritation and inflammation of the urinary tract. Just before death, too, the blood is often invaded by bowel organisms, which can be recovered in blood culture; being a terminal state only, this septicæmia of intestinal organisms is not important, as by the time it sets in the bowel wall has probably lost its normal protective power.

Criteria of Pathogenicity.

These conditions are, however, exceptional. What importance should be assigned to the bacteria which remain in the lumen of the bowel? It must be noted that the media used for culture of micro-organisms are artificial ones; though selective for some bacteria, they may even inhibit others. The amount of growth on culture media may bear little relation to the numbers of bacteria present in the fæces, or to their pathogenicity. Too much emphasis should not be laid on an apparent increase in numbers, such as an excess of streptococci; it has been shown above that great variations in numbers of streptococci occur with change of diet, and of the consistency of the stools. In pernicious anæmia and other conditions with subacidity of the gastric juice, there is a great numerical increase of the normal inhabitants of the bowel, *B. coli*, *streptococci* and especially the anaerobe *B. welchii*. But there is no evidence that these organisms differ qualitatively from those found in healthy persons, or that any individual type of organism is specifically related to pernicious anæmia. It is necessary, too, to avoid the fallacy of treating the patient for such conditions as the presence of coliform bacilli, which are atypical in having a delayed power of fermenting lactose. The usual *B. coli* rapidly produce acid and gas in lactose media, whilst most of the known *pathogenic* Gram-negative bacteria do not show this reaction with lactose in ordinary media. There is an intermediate group which ferments lactose after an interval of several days—some of them may even produce so much ammonia from peptone digestion that an acid reaction never appears—which are classed alternatively as *para-dysentery* or *para-colon* bacilli. A few of these are of known pathogenicity, a few of known harmlessness; there is little evidence that the majority of them exert a harmful action on the animal body. The quality of delayed fermentation of lactose is not therefore significant. A further group of these colon bacilli is found to grow in the presence of normal active serum; some even hæmolyse red blood corpuscles. These serum-resistant and hæmolytic *B. coli* may be pathogenic, but we have no certain evidence on this point. The same is true of hæmolytic streptococci. Their ability to live on blood, digesting and destroying the red corpuscles, makes them, at any rate, potential parasites, and, if they are found elsewhere in the alimentary tract—at the roots of teeth, in the crypts of tonsils, or in the discharge from nasal sinus infection, as well as in the fæces—their possible importance cannot be denied. But if the evidence we have of the pathogenicity of these groups of bacteria is doubtful, evidence of their relevance in a particular patient is usually unattainable; the presence of any sort of specific immune body in the patient cannot be demonstrated by serological tests.

Vaccines from Fæces.

The value in treatment of vaccines made from the fæces, though widely assumed in this country, is not proved by bacteriological criteria, and does not rest on the same scientific basis as, for example, typhoid preventive inoculation, or the treatment of diphtheria and tetanus with serum. Nor has it the support of solid clinical proof, such as that of the value of vaccination against small-pox. It rests mainly on clinical impressions, which, as time goes on, may need to be revised, or, at the least, defined and classified.

In view of the great difficulties which confront anyone attempting to assess the possible pathogenic significance of fæcal organisms, therefore, no clear indications can be found for their use in vaccine-therapy. Antibodies to them may be formed by a patient into whom they are injected, but we have no means of knowing whether these have any specific action or are likely to help the patient in resisting his disease. Although vaccines have a proved place in bringing about protection against subsequent infection, their rôle in treatment is by no means securely founded. Until further positive evidence is accumulated, therefore, we have no warrant for using any but those derived from organisms with known pathogenic action; the promiscuous use of vaccines from other fæcal organisms is unlikely to lead to useful results.

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HOSPITALS AND MOTOR ACCIDENTS.—The British Hospitals Association is asking the Government to introduce a measure making it obligatory upon motorists to insure against third party risks, and empowering hospitals to recover from the insurance companies the cost of treating motor accident patients.

PUBLIC ASSISTANCE COMMITTEES AND HOSPITALS.—Under Section 1 of the Local Government Act of 1929 the London County Council will, on April 1st, 1930, take over the functions of the Metropolitan Asylums Board, as well as of the Boards of Guardians within its area. That area has been divided into ten sections, under a Public Assistance Authority of 48 members, 16 of whom will be coöpted from outside the Council, assisted by local committees. Hospitals are to be dealt with by a Central Public Health Committee, which is the Counc l's old Public Health Committee reconstituted. The county will be divided into five hospital areas, each of which will be coterminous with the boundaries of a group of boroughs. The scheme of rearrangements adopted by the Middlesex County Council provides that the Public Assistance Committee shall be composed of members of the Council only, coöption being confined to the local committees. Among the hospitals to be taken over by Middlesex are the North Middlesex (900 beds), the Hounslow Institution (800), Park Royal (778), Edmonton House Institution (700), and the West Middlesex (325).

Special Articles.

OXIDATION-REDUCTION POTENTIAL.

A SUMMARY OF RECENT WORK.

BY N. F. MACLAGAN, B.Sc.

(From the Courtauld Institute of Biochemistry, Middlesex Hospital.)

IT has been known for many years that the animal body derives its energy from combustion—that is, oxidation—and the exact analysis of this process is therefore of fundamental importance in physiology. In dealing with any form of energy there are two factors to be considered, which are best illustrated in the case of heat energy. Everyone is familiar with the distinction between temperature, which may be termed the intensity factor, and the amount of heat, measured in calories, which is the capacity factor. The different nature of these two quantities is made clear by the experiment of dropping a red-hot needle into a bowl of hot water; the heat capacity of the needle is much less than that of the water, yet heat passes from the needle to the water. Chemical energy may be split into two factors in an exactly similar way, and in the special case of oxidation we may regard the oxidation-reduction potential as the intensity factor, exactly analogous to temperature, which is indeed frequently called heat potential. Oxidation-reduction potential therefore decides which one of two systems will oxidise the other, just as the temperature decides the direction in which heat will pass when two systems are connected; to complete the picture oxidising capacity as estimated by titration may be compared with the heat capacity (calories).

The conception is perhaps made clearer by taking the further example of neutralisation of a base by an acid, where the acidic power may be factored into titrable acidity (capacity) and hydrogen-ion concentration (intensity). This case is also of special interest on account of the similarity in the methods of measuring hydrogen-ion concentration and oxidation-reduction potential. In both cases the first approach was through the use of certain dyestuffs called indicators. Litmus is an acid base indicator which is red in acid and blue in alkaline solutions; moreover, it changes colour in a certain relatively narrow range of pH, so that in this range its colour is an index of the pH. Similarly, methylene-blue is blue in the oxidised and white in the reduced condition, and changes colour in a narrow range of oxidation-reduction potential; to revert to the first example, it may be compared to a thermometer which indicates heat potential over a limited range. Ehrlich [7] was the pioneer in this field, and he was able to demonstrate differences in the reducing power of various organs with respect to indophenol blue and alizarin blue. Much work of a similar character failed to produce any definite advance owing to the fact that the relationships between the different dyes were not understood; also no zero of oxidation-reduction potential had been established, so that quantitative deductions from the experiments were impossible.

In 1920 Gillespie [9] published the first observations upon the electrode potential of bacterial cultures, and it was this work which led W. M. Clark and his colleagues to their "Studies on Oxidation reduction," [4] which have thrown such a flood of light upon the whole problem. With the aid of electrode measurements they have been able to arrange a large number of dyes in an orderly series on a definite scale of oxidation-reduction potential, and as a result of their work it is now possible to make a fair estimate of the oxidation-reduction potential by observing the colour of a suitable dye. In order to understand the relation between the electrode and the dye methods, it is necessary to consider in more detail the chemistry of oxidation.

The Conception of Electron Transfer.

The older chemists regarded oxidation as an addition of oxygen or a subtraction of hydrogen, and reduction as the reverse. But with the development of the ionic theory this view has given place to a more general one, which may be conveniently illustrated in the oxidation of ferrous to ferric chloride

$$2FeCl_2 + Cl_2 = 2FeCl_3.$$

It is known that both $FeCl_2$ and $FeCl_3$ exist in solution mainly in the ionised form, so that this reaction may be written

$$(2Cl^- +) Fe^{++} + Cl \rightleftharpoons Fe^{+++} + Cl^- (+2Cl^-).$$

Evidently the essential part of this reaction is the transference of an electron—the unit negative charge of electricity—from the ferrous ion to the chlorine atom, which is thereby converted to an ion; so that the chlorine may be regarded as merely taking up the electron liberated in the oxidation of ferrous to ferric ion, which is therefore represented thus:

$$Fe^{++} \rightarrow Fe^{+++} + e.$$

This idea is of very wide application, and in general oxidation and reduction are associated with a loss and gain of electrons respectively

$$ox + e^+ \rightleftharpoons red^- \quad \text{(Equation I.)}.$$

On comparing this equation with that for the neutralisation of a base by an acid

$$H^+ + OH^- \rightleftharpoons H_2O$$

it is evident that the reducing intensity of a solution is determined by the "concentration of free electrons" in the same way that the acidic intensity is determined by concentration of hydrogen ions. Apparently also a plate of noble metal may be regarded as an "electron electrode" in the same sense that a film of adsorbed hydrogen is regarded as a hydrogen electrode. Thus, when an electrode of plain gold or platinum is immersed in a solution, the potential set up is a measure of the reducing intensity of the solution and is called the oxidation-reduction potential E_h.

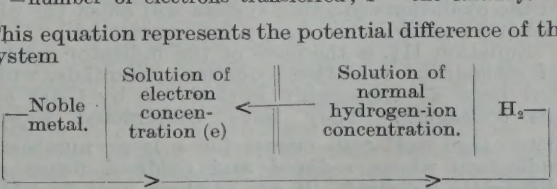
It should be noted that this treatment is purely formal, and that no objective reality is to be attached to such terms as "concentration of free electrons." There is, in fact, no evidence of the existence of free electrons in aqueous solution, and a difference in the mode of action of the hydrogen and oxidation-reduction electrodes is postulated which is probably fictitious; moreover, for the sake of simplicity, concentration is here substituted throughout for activity. The equations obtained by more rigid methods are, however, identical with those derived on the above hypothesis which has the advantage of presenting a clearer mental picture of the terms involved.

The oxidation-reduction potential is a single electrode potential whose absolute value cannot be determined, since a second single electrode must be coupled with the first before a measurement can be made. It is the practice to refer all such measurements to the normal hydrogen electrode, to which a potential of zero is arbitrarily assigned—that is, when an oxidation-reduction electrode is coupled with a normal hydrogen electrode the potential developed is attributed entirely to the former. This convention is expressed in the following equation:

$$E_h = -\frac{RT}{NF} \log (e) \text{ volts (Equation II.)}$$

when R = gas constant; T = absolute temperature; N = number of electrons transferred; F = the faraday.

This equation represents the potential difference of the system



the potential at the liquid junction being neglected. It is further agreed that E_h be taken as positive when

the current tends to flow as in the diagram. E_h is then an index of tendency to oxidise. Solutions having a positive E_h will oxidise, those having a negative E_h will reduce the normal hydrogen electrode. Also any solution will tend to oxidise one having a smaller, and tend to reduce one having a greater E_h than itself.

Reversible Reactions.

It is important to recognise that this treatment applies only to a perfectly reversible process, and herein lies the difficulty of applying it to living systems, whose processes are not in general reversible. However, we must consider together with this restriction the probability that many biological oxidations which are apparently irreversible proceed by a number of stages, some of which are truly reversible.

A further limitation of the theory outlined above arises when the reaction velocity is considered. The oxidation-reduction potential certainly decides in which direction the reversible reaction will proceed but does not say at what rate; this rate may be infinitesimally small, in which case the reaction does not proceed at all. The rate is, of course, frequently greatly affected by the oxidative catalysts, whose influence must therefore always be an essential factor in the problem.

The physical meaning of equation II. is revealed by application of the law of mass action of equation I.

$$(e) = K \frac{(red^-)}{(ox)}$$

Substituting in II.

$$E_h = \frac{RT}{F} \log K - \frac{RT}{F} \log \frac{(red^-)}{(ox)}$$

$$= E_o - \frac{RT}{F} \log \frac{(red^-)}{(ox)} \text{ (Peter's equation).}$$

E_o is a constant for any one reaction and is obviously equal to E_h when $(red^-) = (ox)$—i.e., at half oxidation.

It will have been noticed that the reductant in the above equations is an anion. This is a special case, but it is obvious that one or both of the reactants must exist in the ionised condition when an electron transfer is regarded as the essential process—e.g.,

$$ox + e \rightleftharpoons red^-$$
$$ox^+ + e \rightleftharpoons red$$
$$ox^+ + 2e \rightleftharpoons red^-$$

Thus the hydrogen-ion concentration may also affect the system as shown by the following equation:

$$H^+ + red^- \rightleftharpoons Hred.$$

In such a case it is usually only possible to measure the total reductant

$$S_r = Hred + red^-$$

and the relation of this to the active reductant red^- evidently depends upon pH. The following equation applies:

$$E_h = E'_o - \frac{RT}{F} \log \frac{Sr}{So} \quad \text{(Equation III.)}$$

where E'_o is a function of the pH.

It is interesting to note that this relationship between E_h and pH is a mutual one, so that changes in the oxidation-reduction system will affect the pH; the two equilibria are closely interconnected.

Equation III. is the basis of the indicator method of estimating oxidation-reduction potentials, which has been so thoroughly worked out by Clark and his colleagues. They have constructed E_h–pH percentage oxidation curves for a large number of indicators whose reduced and oxidised forms are differently coloured. If one of these dyes be added to a solution of known pH, in an amount so small as not appreciably to affect the existing equilibrium, the colour becomes an index of the oxidation-reduction potential. By choosing suitable indicators which change colour in the E_h (and pH) range under investigation a fair accuracy is obtainable.

Biological Applications.

The oxidation-reduction equilibrium is at least as important in the body as the acid-base equilibrium. It may therefore appear at first sight somewhat remarkable that the quantitative measurement of oxidising intensity—E_h—should have lagged so far behind that of acidic intensity—pH—in biology, but this is only the result of pushing the analogy too far. Neutralisation is evidently a unique process in aqueous solutions as it is a single reversible reaction in which the water takes part:—

$$H^+ + OH^- \rightleftharpoons H_2O.$$

On the other hand, the terms oxidation and reduction include a vast number of reactions, many of them irreversible, whose only common property is an interchange of electrons, and is thus not specifically related to the solvent. In addition, the interpretation of measurements is made difficult by our ignorance of the exact chemical mechanism of the simplest biological oxidation. The probable participation of reversible processes in these apparently irreversible oxidations has already been mentioned, but it would appear that few such processes have yet been found which are susceptible to electrode measurement.

It has been mentioned above that the earlier researches with indicators commenced by Ehrlich in 1885 did not produce any very definite results; the review of Needham and Needham[11] contains an excellent account of these researches. Clark and his collaborators have now removed many of the practical and theoretical difficulties, with the result that since 1920 there has been published much important work of which only the outstanding features can here be noticed.

The Reduction Potential of Bacteria.

The reduction potential of bacteria was first studied electrometrically by Gillespie,[9] who showed that anaerobic cultures developed increasingly negative potentials, the actual values obtained being very different in the few cases investigated. This was confirmed by Cohen, Cannan, and Clark,[4] who obtained similar results with cell suspension and who have also made some very interesting preliminary observations on the influence of glutathione on the development of these potentials. They conclude that the aerobic tissue cell or bacterial culture is roughly poised between +0·1 and 0·2 volts E_h. The system is not, however, in equilibrium with the atmospheric oxygen, which serves merely to oxidise the reducing substances elaborated in the cells at such a rate that the E_h is maintained within these limits. Under anaerobic conditions this controlling factor is removed and the E_h gradually falls, producing death of the cells (except in anaerobic organisms).

Evidently the classification of bacteria into aerobes and anaerobes has some reference to E_h. Quastel and Stephenson[12] concluded from their work on *B. sporogenes* that the behaviour of obligatory anaerobes is best explained on the assumption that they cannot grow above a certain potential. Similar results were obtained by Fildes,[8] who showed that the germination of spores of *B. tetani* failed to occur in media whose E_h was greater than +0·01 volts. Moreover, he explains the fact that this strain will not grow when injected into the guinea-pig by the incompatible E_h of the subcutaneous tissue fluid.

Intracellular Measurements.—In addition to these extracellular investigations, direct measurements of the intracellular E_h have been made by a method first introduced by Needham and Needham[11] which consists of making micro injections of suitable indicators into the living cell. This method has also been used by Brooks[1] Cohen, Chambers, and Reznikoff[5]

Rapkine and Würmser[13] Chambers, Pollack, and Cohen[3] and in view of the difficult technique it is perhaps not surprising that absolute agreement has not yet been reached. The aerobic potentials are mostly of the same order as those recorded by Cohen, Cannan, and Clark for bacteria and cell suspensions, but while the Needhams maintained that the E_h of the *amœba proteus* was unaffected by anaerobiosis, the later workers found a fall of potential under these conditions. It has been emphasised by Cohen, Chambers, and Reznikoff that three factors are concerned in the interpretation of the results of these experiments—the intensity, capacity, and rate factors,—and it is no doubt the difficulty of allowing for the last two which is responsible for the existing uncertainty.

In this connexion, Cannan's work on *mercuralis perennis* is of great interest[2]; this plant contains a pigment, hermidin, which is in fact a reversible oxidation-reduction indicator, so that the E_h can be found in this case under perfectly normal conditions. It proved to be about —0·1 volts.

Oxidative Enzymes.

It was shown by Dixon and Quastel[6] that the system consisting of a mixture of reduced and oxidised glutathione was an anomalous one, for the potential proved to be independent of the concentration of the oxidised form. This implies that the change from reduced to oxidised glutathione is an irreversible one and therefore cannot be studied in this way, but the production of a stable potential is still of great interest, especially as it is not certain that glutathione acts through the change from reduced to oxidised forms. The cystine-cysteine system is in the same class, and the researches of Michaelis[10] and co-workers on the electrode potential of cysteine is yielding valuable information about its metallic complexes. Compounds of this type have been shown by Warburg[14] to be intimately concerned with tissue oxidation, and while the mechanism responsible for these potentials is still uncertain it is considered probable by Michaelis and Flexner[10] that the sulphydril group is the principal poising agent in the cells.

In conclusion, it may be emphasised that accurate work on oxidation-reduction potential in biology has only been going on for about nine years, and that much of the time has been taken up with essential chemical preliminaries. The importance of the subject cannot be doubted, and it is reasonable to expect considerable advances in the near future.

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SALE OF ST. BARTHOLOMEW'S HOSPITAL LANDS.—The Charity Commissioners have sanctioned the sale of 346 acres of building land at Stanmore belonging to St. Bartholomew's Hospital. The price paid for 249 acres of Kenton Lodge Farm, Stanmore, is £62,736. An option, exercisable within 12 months, has been given on the purchase, for £24,137, of a further 95 acres adjoining.

ST. MARY'S HOSPITAL POST-GRADUATE COURSE.

THE post-graduate course held at St. Mary's Hospital during the first week-end of the winter session has become deservedly popular among practitioners. The attendance this year was as large as usual, in spite of the fact that other teaching hospitals are adopting the excellent plan of providing at this season of the year a short concentrated course. We publish on p. 751 of this issue one of the lectures delivered at St. Mary's, and abstracts of two of the other lectures are given below. We hope in the future to give further space to addresses delivered at St. Mary's and at other hospitals in London during this month. Mr. T. G. Stevens chose for his subject

Retention of Urine in Women.

Retention of urine, he said, though not a common trouble in women, might be a serious one if imperfectly treated. Its causes ranged from hysteria to a retroverted gravid uterus. Retention of urine might complicate or follow labour, and might also follow operations, especially those for prolapse. It might also be the result of the pressure of tumours and other lesions. Hysteria in young girls might lead to retention of urine, from simple functional failure of micturition. Before making the diagnosis, hæmatocolpos, of which retention may be the first symptom, must be excluded, and also rare pelvic tumours. Hysterical stigmata should be looked for. All ordinary efforts to promote micturition should be tried before a catheter is passed, but this operation should not be postponed longer than 24 hours at the utmost. Usually all simple methods fail, and one passage of the catheter may cure. No doubt the discomfort of the passage has some effect, but suggestion plays a greater part. According to Mr. Stevens, retroverted gravid uterus is the commonest cause of retention of urine in women, but is frequently overlooked. The history is misleading, some women stating that they are "always passing water," when they mean that they are always wet from the dribbling overflow of a fully distended bladder. A fatal mistake is to treat such a case as one of frequency of micturition without a careful examination. *Any* micturition trouble in the presence of a large abdominal tumour ought to raise the suspicion of a distended bladder, and demands the passage of a catheter. The danger of retention with overflow is that of infection of the distended and atonic bladder. In such a bladder the results of infection are far worse than in common cystitis with an empty bladder. Sloughing of the mucous membrane may occur, and infection may travel up the periureteral lymphatics to the kidneys, with the production of multiple abscesses (surgical kidney), septicæmia, and uræmia. In common cystitis with an empty bladder ascending infection seldom occurs. In the absence of overflow the passage of a catheter prevents all these dire results, and once the bladder is empty a retroverted gravid uterus can easily be felt filling the pelvis. If this can be replaced easily with the fingers, as it often can, the cure is at once complete. If, however, manipulation fails, a cure can still be obtained by keeping the patient in bed, lying in the semiprone position, and by passing a catheter to empty the bladder every eight hours. If this method is adopted the uterus usually replaces itself in about three days. A large ring pessary in the vagina often assists the replacement, but will have no effect if the patient is walking about. It is never necessary to induce abortion to cure these cases, but spontaneous abortion sometimes occurs, especially if efforts at finger replacement are too vigorous. Mr. Stevens pointed out that while retention during labour may be caused by the pressure of the fœtal head on the neck of the bladder, after labour inability to micturate is solely the result of fatigue and the stretching of the abdominal muscles. The patient is

unable to make even the small straining effort necessary for micturition in women; it is interesting to note that few women realise that any effort at all is involved. After prolapse operations retention may also be due to the fact that the slightest strain causes pain in the new perineum, from stretching of sutured tissues; hence the patient at once inhibits the effort and micturition may fail. If with the first strain the act starts, the patient usually has no further trouble. Drugs, such as hexamine or boric acid, which irritate the bladder, will sometimes assist the act, but usually in post-operative cases a catheter has to be passed very gently every eight hours for several days. The only common tumours which compress or stretch the urethra and neck of the bladder are cervical fibroids, but occasionally fibroids in the body of the uterus may have the same effect, especially if the uterus is retroverted. It is rather a stretching of the urethra than actual compression which leads to retention in these cases, in which the catheter always has to be passed a long distance, sometimes as much as five inches, before the urine will flow. Mistakes may arise if the catheter is not passed sufficiently far, for no urine will be obtained, and the distended bladder may be taken for an ovarian cyst. Ovarian tumours rarely cause retention, but when they do it is because they are incarcerated in the pelvis. Incarceration may be brought about by adhesions in Douglas's pouch; but certain ovarian tumours have the broad ligament stretched over them, and thus tend to lever up the uterus out of the pelvis and to press it against the neck of the bladder and pubes. A pelvic hæmatocele, if large enough, may also press the uterus against the neck of the bladder, and so may widespread pelvic suppuration. Once any pelvic mass has caused retention an abdominal operation for its removal is imperative, the bladder being kept empty by catheter until the operation can be done.

Diabetes.

Dr. C. M. Wilson said that sepsis was like a magnifying mirror that stood between the observer and the diabetic, and until it was removed it was impossible to obtain an undistorted view of the diabetic's condition. He brought forward examples of recovery of carbohydrate tolerance following removal of sepsis. A woman who required 50 units of insulin daily was able to achieve the same results with 8 units a few weeks later after the removal of septic tonsils and septic teeth. A musician, whose unstable temperament made treatment by both dieting and by insulin equally unsatisfactory, had 10 per cent. sugar in his urine. After drainage of a septic bladder he became sugar free, without any change in the rest of the treatment. Dr. Wilson pointed out that the removal of tonsils since the introduction of insulin was a reasonably safe procedure if an adequate amount of carbohydrate was given and utilised, that the consumption of fat in the days previous to the operation was drastically curtailed, and that the minimum of anæsthetic was given. He was, however, far from advocating that surgical procedure should be lightly embarked upon. The evidence of sepsis must be adequate. When this was absent, or had been removed, it was necessary to decide whether the treatment should be confined to dieting, or whether insulin should be administered. Earlier he had been reluctant on grounds of expediency to use insulin except in those patients where its use could not be avoided, but at the present time he was using it in a much larger proportion of cases. The general condition of the patient was often much more satisfactory with insulin, and its use enabled him to cut down the amount of fat that was necessary. He aimed at giving a diet to an adult containing 80 to 100 g. carbohydrate, 1 g. of protein for each kg. of the patient's weight, and sufficient fat to maintain the weight rather below normal without acidosis. The limitation of protein was frequently neglected, since it was overlooked that sugar could be formed from protein, and that the proportion of protein given was an important factor in the production of acidosis.

Dr. Wilson then dealt with the development of premature arterio-sclerosis in the diabetic; coma, which had been the chief cause of diabetic deaths before the introduction of insulin, was being replaced in that rôle by arterio-sclerosis. It therefore became important to inquire why the diabetic was specially prone to arterio-sclerosis. He thought there was some evidence that the excessive fat in the diet of the diabetic was an important factor, by predisposing to excess of cholesterol in the blood. If that were true it was necessary to keep the fat in the diet within limits, and in doing this insulin was most helpful by keeping the carbohydrate element high, with a corresponding fall in the amount of fat. The diseased heart muscle of many middle-aged and elderly diabetics seemed to demand a higher level of sugar in the blood than normal, if it was to be properly nourished; a practical application of this demand was to be found in the caution required in any attempt to lower a high blood-sugar in a diabetic with diseased heart muscle by insulin. It was easy to provoke an attack of angina pectoris by the administration of insulin, and if insulin were used with patients liable to such attacks it was necessary to use a high carbohydrate diet. Dr. Wilson had been impressed with the importance of equal caution in the use of insulin in diabetics with retinitis. He then discussed diabetes in children, and particularly in children whose glucose tolerance curves were not typically diabetic, and yet were not normal. Such cases should be watched; he had seen two such children develop typical diabetic curves.

He felt that the education of the diabetic patient, upon which ultimate success largely depended, did not receive sufficient attention. The diabetic should learn his diet and the value of each element in it. It was possible to simplify this to a great extent for him. He should learn, too, how to test his urine for sugar, and how to avoid coma and gangrene. Many diabetic patients were seen in the out-patient department without inspection being made of their feet. Coma was largely a preventable accident. Nobody would think of driving a car without an insurance against third party risks; it was far more important for the diabetic to master the technique of insulin administration. He might not need it for the present, but the day would probably come when an infection would render it necessary, and his knowledge gained at leisure might then save his life. Exercise was very helpful; it was the tissues and not the kidneys that removed the excess of sugar from the blood, yet it was a common practice in hospitals to see diabetic patients confined to bed for weeks without any provision for exercise. The attempts made in recent years to persuade the practitioner that diabetes was a simple affair were very well in their way, but we had to realise that in few medical diseases could the doctor be of as much assistance to his patients as in diabetes, and that if he was to render this assistance he must himself master the broad principles on which the diabetic diet of to-day rests, and the details which make it practicable to transfer that knowledge to the patient.

CHILDREN'S HOSPITAL, BELGRADE.—Through the Save the Children Fund (28, Gordon-street, London, W.C. 1) an appeal is being made for this hospital by the members of the British Legion who have just returned from the annual congress of the Inter-Allied Federation of Ex-Service Men at Belgrade. They call to remembrance Dr. Katherine Macphail's work in creating a modern, well-equipped hospital of 50 beds and an out-patient department through which more than 100,000 children have passed during the last ten years. The infant mortality in Serbia is "appallingly high"—one in three. The hospital trains Serbian girls as nurses under the supervision of a British matron. It is partly maintained by the Jugo-Slavian Government, but a further £2000 has to be found, two-thirds of which has to be collected by Dr. Macphail. This is the only hospital exclusively for children in the country.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Association of Insurance Committees.

AT the annual meeting in Ayr of the Scottish Association of Insurance Committees Provost Irvine, of Coatbridge, the President, commented on the need for specialist and consultant services, not only as an advance towards a complete and satisfactory medical service for the insured population, but also as a sound financial proposition, saving its cost by reducing the amount paid out in sickness benefits, and ultimately enabling approved societies to make substantial contributions or even to meet the whole expenditure upon these services. He also criticised the hiatus now existing between the statutory age for leaving school and the statutory age for entering into national insurance. From the period of infancy till the age of leaving school health services were continuously available, at considerable cost it is true, but with satisfactory results. Yet, for those between the ages of 14 and 16 years, no provision for health service was made. This serious anomaly stood self-condemned. Provost Irvine is a well-known pioneer in Scottish public health work, and understands both sides of the question.

Drugs for Insured Persons.

One of the best parts of the Scottish system of National Health Insurance is the central checking bureau at Glasgow, through which all prescriptions pass, and are there subjected to technical criticism and pricing. It was stated at the Ayr meeting that the number of prescription forms handled last year on behalf of the 54 insurance committees in Scotland—namely, 2,655,737—was a decrease of 93,000 on 1927, and 104,000 less than the record year of 1926. The value of the prescription forms, exclusive of the cost of insulin, was £147,328, a decrease of £4410 on 1927. The average price per form at 13·31*d.* was very slightly above the average for the previous year, 13·24*d.* The tariff price of 100 units of insulin has been reduced by successive stages from £1 6*s.* 8*d.* to 2*s.* 7*d.*, and it was rumoured at the meeting that a German firm had offered to supply London hospitals for a year with insulin at 1*s.* for 100 units. The bureau has now handled 32¼ million prescription forms at a total cost of 1¾ million pounds. The vexed questions of who should foot the bill for drugs for insured persons while in hospital led to the passing, by a large majority, of the following motion: "That the cost of drugs, including insulin, supplied to insured persons under treatment in voluntary institutions should be a charge against the drug fund of the insurance committee, instead of having to be met from the funds of the voluntary institution." The original Insurance Commission and the later Board of Health never saw their way to accept this proposition; it remains to be seen whether the insurance committees will be more successful with the new health department.

Working Out the 1929 Act.

Mr. John Jeffrey, Secretary of the Department of Health, gave the meeting his views on the effect that the Local Government (Scotland) Act, 1929, will have on the work of insurance committees. Endless complications would, he said, ensue unless steps were taken to achieve harmony in the relationship between the general practitioner and the specialist in hospital and dispensary services. When a patient was referred to a hospital or dispensary the very fullest medical history sheet should accompany him, and just as surely when he returned to the care of his insurance practitioner the fullest information regarding his condition and treatment should be supplied by the specialist in whose charge he had been. Mr. Jeffrey said he had been advised that 20 to 25 per cent. of insured persons receiving treatment from their panel doctors were in need of specialist advice. The health insurance funds had failed to meet that requirement, but under the hospital organisation of the 1929 Act it should be possible to bring to the aid of the insured person all the requirements of equipment and specialist services, while retaining the traditions of unfettered work. He went on to speak of the advantage to the general health of the community if some system could be devised whereby each insurance committee should supply to the local authority statistical information on the nature and extent of sickness among insured persons in the area. At present the local authority had no knowledge of the prevalence of ordinary sickness, or of the nature and causes of that sickness, or whether any action on its part could prevent or reduce such sickness. Now that the insurance committee and the public health authority were to coöperate the gap could be filled up.

Dr. Kinloch envisaged the development of a local authority hospital service with everything in the nature of elaborate equipment and specialist skill available for the insured population through their panel practitioners. This provision would in time release insurance committees from most of their present commitments on additional benefits, and enable them to plan a comprehensive extension of the insurance medical service embracing the dependents of insured persons not covered by the local authority service.

A Crematorium for Edinburgh.

Over 20 years ago a movement was started to provide a crematorium for Edinburgh, and a company formed in July, 1928, under the chairmanship of Lord Salvesen, lately acquired from the corporation two and a half acres of the Easter Warriston Estate, at a cost of £3000, on condition that dividends paid on the share capital should not at any time exceed 6 per cent. per annum. The late Sir Robert Lorimer was the architect, and the original mansion house has been adapted partly to form the crematorium and partly to form a chapel. The whole cost of buildings, roads, grounds, and furnishings is expected to be about £10,000. Hitherto all Scottish cremation has been done in the Glasgow Crematorium.

A New Hospital for Cripple Children.

On Oct. 1st the Duchess of York laid the foundation-stone of the new Edinburgh Hospital for Cripple Children. Sir David Wallace, chairman of the committee, said that sufficient money had been raised to justify the commencement of the building. The site extended to 14 acres, and its large size would permit of the children being educated in the open air. Some would be trained in workshops so arranged that the patients could work in the open air and the sunlight. It was proposed, said Sir David, that major and minor clinics should be formed throughout the various counties under the scheme, and at the earliest possible time children treated in the hospital would be sent to those clinics, after which the necessary treatment could be carried on in their homes under careful supervision, and in close relation with the central staff of the hospital. I understand that of the sum of £70,000 aimed at, some £55,000 has already been raised.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Dispensary Salaries in Co. Mayo.

FOR many years the salaries of poor-law medical officers in County Mayo have been markedly lower than those of any other county in the Irish Free State. Not only were the salaries inadequate, but they were very uneven, so that medical officers in certain districts were drawing only half the pay of their neighbours doing approximately equal work. Many appeals had been made to the county board of health to establish an equable scale of salaries for the whole county, but the appeals were fruitless. Attempts by the Department of Local Government

and Public Health to persuade the Board of Health to move were equally useless. At length, however, the Minister has found it necessary himself to intervene, and by sealed order he has fixed the salaries of the several medical officers in the county. The new salaries are based on a scale of £200 a year, rising by annual increments of £5 a year to a maximum of £300. Each medical officer gets credit for all his pensionable service under the board. The immediate increase of salary to the several medical officers varies from nil to £160 a year, and averages £57 a year. The number of dispensary medical officers in the county is 30, and the immediate increase in salaries amounts to £1706 10*s*. This is the first occasion on which a whole scale of salaries has been established by sealed order over the heads of the local authority, and it is important for medical officers elsewhere that the precedent has been established.

Antivaccination and its Costs.

County Wexford has been the one county in Ireland in which the antivaccinationist movement gained any foothold, and for some years past its inhabitants have been very inadequately vaccinated. Within the past year or two, however, the Department of Local Government and Public Health determined to enforce the laws concerning vaccination, and legal measures were taken to compel the local authorities to fulfil their statutory duties. Reluctantly enough they are instituting prosecutions of those who neglect to bring their children for vaccination, and they find that each prosecution costs them nearly £1. There are said to be some 18,000 defaulters in the county, so that the total cost may prove to be considerable. At its last meeting the Board of Health made the naïve request to the Minister for Local Government and Public Health to give them a grant from public funds to enable them to enforce the laws. Having neglected its duty for years, the board finds the expense of fulfilling its accumulated obligations too heavy, and it suggests that the general taxpayer should come to its aid.

MEDICINE AND THE LAW.

The Law of Murder: Confession Without Corpse.

IT was not till 1926 that (as one result of the Coroners (Amendment) Act) it was possible to hold an inquest in the absence of a dead body. The possibility or impossibility of prosecuting a charge of murder without the proved existence of a corpse was discussed afresh last month. A man walked into a London police station and gave himself up as a self-confessed murderer. He said that one night in August last he met a woman named Rose while he was under the influence of drink, quarrelled with her, and flung her over the parapet of Waterloo Bridge, at an exact spot which he described. When he was charged before Sir Chartres Biron, the police informed the court that no body had been found, no woman named Rose was missing, and the man had not been seen in company with any woman that night, but had been seen alone in a public-house. They added that to throw a body over the bridge meant lifting the body up some seven feet, and required great strength, and that no screams were heard, either by a constable on duty 50 yards off or by a night-watchman slightly farther away. The magistrate, not wholly convinced by the confession, dismissed the charge. This course leaves the police free to prosecute afresh if new evidence becomes available. A confession, undoubtedly, can be adequate evidence, provided that it is clear and unequivocal. So said the Court of Criminal Appeal 20 years ago, in a case where a mother confessed that she had burnt her baby's body. But the police, who receive many strange confessions when any criminal mystery becomes a public sensation, are aware that abnormal mental states may prompt such statements, and they examine them with a care which sometimes becomes scepticism.

English criminal procedure is reluctant to see an accused person self-convicted. This tradition or instinct militates against the acceptance of a well-known police magistrate's recent suggestion that an accused person should be not only a competent but also a compellable witness. And English judges know the dangers of finding murder charges to be established when no dead body has been discovered. Coke, in his Institutes, gives a quaint anecdote of a case where the murderee returned after the supposed murderer had been hanged. An orphan girl was brought up by her uncle, and, one day, when he was correcting her for some fault in the method usual at the time, she was heard to cry out "Oh! good uncle, kill me not." Next day she was not to be found, and as the uncle stood to inherit property at her death, he was put into jail on suspicion of murder. Released on bail to give him a chance to produce his niece, he stupidly produced another girl of the same size, dressed in his niece's clothes. The trick was discovered, and he was hanged for murder, but anon the niece appeared, proved her identity, and successfully claimed her estate. She had run away into the next county instead of going to school the morning after her uncle beat her, and she had been kindly entertained by strangers who took pity on her. Coke tells his tale to point the double moral that judges must not be too hasty in assumptions in murder trials, and that innocent persons must not play silly tricks as the uncle did. A famous case of the same kind, reported in the State Trials, is that of the Perrys. Two brothers and their mother were found guilty of murder and hanged, and in a few years' time the supposed victim reappeared. There is a dictum of Sir Matthew Hale that he would never convict of murder unless either a dead body is found or the fact of the murder is proved. The latter alternative occurs in murders at sea, where the body is thrown overboard. The leading case is R. *v.* Hindmarsh (1792), where a seaman murdered his captain. No body could be produced, but there was sufficient evidence of the accused's declared intention, and of the actual struggle in which the captain was seen to be pitched into the sea.

A Dangerous Rat Poison.

The death of an Alton farmer from cyanide poisoning, as a result of blowing a rat poison powder down a rat hole in a closed shed by means of a bellows, has been noted in several daily papers. It is not quite clear what was the exact nature of the powder in question, although its name "cyanogas" would suggest to anyone acquainted with drugs or elementary chemistry that it was highly poisonous. A man may, however, be a good farmer without much knowledge of the Pharmacopœia, and such a man has a right to expect that poisons should not be put in his hands without full instruction for use. The coroner in this case described the directions as, in his opinion, carelessly drawn. The technical adviser of the manufacturers said it was dangerous to use the powder with a bellows or, indeed, in an unventilated shed; he considered that the instructions were strict in regard to ventilation. It is, no doubt, very difficult for a technologist to realise the extraordinary risks which people unused to handling dangerous materials will take. For this reason such rat poisons as barium carbonate, squill mixtures, and the like should suffice the general public, and the use of more deadly preparations be confined to professed vermin killers. The use of cyanides was prohibited in the city of Paris by an edict of the police last year, and they should only be supplied with the most explicit instructions for their use. Poisonous gases are more easily evolved than controlled or dissipated, and it is dangerous to disperse poisonous powders by blowing.

A HOSPITAL BURNED DOWN.—Aberdare and District General Hospital was totally burned on Sept. 27th, when two firemen lost their lives and a third was seriously injured. There were over 80 patients in the wards but they were all safely removed, at great risk to the matron and nurses. The damage is estimated at £20,000.

Correspondence.

"Audi alteram partem."

MALIGNANT TUMOURS IN FOWLS.

To the Editor of THE LANCET.

SIR,—The explanation offered in your last issue (p. 697) by Dr. A. M. Begg and Dr. W. Cramer for the appearance of Rous sarcomata in fowls which they had injected with extracts of fowl pancreas and mouse carcinoma—namely, that sufficient traces of the Rous agent were retained in a mortar after the latter had been washed in running water—may satisfy them, but it does not apply to the experiment of ours which they cite. Our material was merely minced with sterile scissors in a sterile Petri dish, and was not ground in a mortar, nor had any Rous material been in use at or about the time. Further, the bird that developed the tumour was one in a series of 23 inoculated with the same tissue, and none of the series came in contact with fowls bearing Rous tumours.

Perhaps I may be allowed to add that our tumour was at first histologically distinguishable from the ordinary Rous sarcoma, that one at least of Dr. Murphy's tumours produced by testicular extract was quite distinct, and that the tumour produced by Dr. Maisin through the action of ionium nitrate on grafted embryo tissue was again different.

I am, Sir, yours faithfully,

ARCHIBALD LEITCH.

Cancer Hospital Research Institute, London, S.W., Oct. 7th, 1929.

INTERPRETATION OF THE WASSERMANN REACTION.

To the Editor of THE LANCET.

SIR,—As one who has long contributed to your columns on the subject of the interpretation of the Wassermann reaction, I venture to lay before your readers a few criticisms of Dr. T. E. Osmond's article on this subject appearing in your issue of Sept. 28th (p. 677). I begin by quoting three sentences from an admirable leading article in THE LANCET of March 2nd (p. 453):

1. "Even when the test is made in laboratories where routine procedures are most carefully standardised under the direct personal supervision of an expert, the reaction given by a patient not actually undergoing treatment may vary in an unaccountable manner . . ."
2. "Two years ago a series of comparative tests were performed by pathologists working in different laboratories, all of whom used substantially the same technique. The results differed by as much as 25 per cent."
3. "It is true that the exact relation of the degree of strength of the Wassermann positive readings to the severity of infection is unknown."

In the same issue of THE LANCET appeared an article by myself in which I said:—

"During the last 20 years I have reiterated my opinion that while the Wassermann reaction was a good servant it was a bad master, that the test was clearly not specific, that there appeared no logical reasons why other similar chronic infections should not produce a like reaction, and that, therefore, no one should be dogmatically branded as a syphilitic on the evidence of a positive Wassermann reaction unsupported by any other historical, clinical, or pathological evidence."

The League of Nations has recently published the Report of the 1928 Copenhagen Conference on the "Sero-diagnosis of Syphilis." This conference was attended by pathologists of 16 nations, and the resolutions which they passed seem to suggest that Dr. Osmond's dogmatic assertion in the first sentence of his article is not corroborated by world opinion. Dr. Osmond says:—

"Provided that a satisfactory technique is employed and the test carried out by a competent pathologist a positive Wassermann reaction (++ or +) means that the patient is infected with syphilis—recent or remote. The only exception to this rule is 'yaws.'"

It is true that this initial dogma is a little hedged against in some later sentences, such as "no case should be labelled syphilis on the strength of a single isolated positive Wassermann," "the fluctuating Wassermann—on one occasion positive and another negative—is now recognised by most workers." and in his concluding summary "a positive result nearly always means syphilis, if there is a doubt it should be repeated and confirmed." In view, however, of his initial dogma carefully placed so as to catch the eye of those who will not read the whole article, I cannot but feel that the subsequent less dogmatic remarks were made, not because Dr. Osmond doubted the truth of the dogma contained in his opening sentence, but because he had read the Copenhagen Report.

This report contains eight resolutions passed by the conference, from which I will make quotations from four; they are:—

1. "The Conference is of the opinion that the best of them (flocculation tests) may be regarded as equal in value to the best of those which depend on fixation of complement (Bordet Wassermann)."
2. "The Conference recommends that in order to secure the most reliable information to the clinician, at least two different sero-diagnostic methods should be used."
3. "The Conference recommends that the serologist should check the accuracy of his tests by regular and very frequent reference to clinical data."
5. "The Conference wishes to reiterate with particular emphasis: (3) that except in the case of a few well-defined pathological conditions, syphilis is indicated with a degree of probability, which closely approaches certainty, when several tests performed according to different methods give a positive result."

These resolutions contain opinions widely differing from, and in my opinion much more in accordance with facts than, that expressed in the opening sentence of Dr. Osmond's article which I have quoted, and which I believe to be incorrect and misleading.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 2nd, 1929. H. WANSEY BAYLY.

CURES AND PREVENTION.

To the Editor of THE LANCET.

SIR,—I cannot allow the address of Sir Farquhar Buzzard to the students of the University of Birmingham to pass without the strongest protest. It is a frank confession of the failure of the accepted methods of treatment of disease that is mainly of lesions produced by microbes in the human body, and it is this incapacity of medicine to produce efficient intravital germicides that has led to this confession of failure of Sir Farquhar Buzzard and the public criticism of our profession which he acknowledges to be just. For there is only one efficient intravital germicide in the Pharmacopœia, and that is anti-diphtheritic serum.

Is it not true that all our efforts in the teaching of the practice of medicine are concentrated on enabling the student to discover the tissues diseased, and to relieve the symptoms produced and most vitally to give that disease a name, with which the patient will be satisfied? We do not teach the student how to kill the microbes causing that disease and thus "cure" the disease. That is what our patients demand, and quite properly demand, and if we, as physicians, cannot do it, they will turn to those who say they can, as patients suffering from orthopædic troubles have turned to the unqualified, because qualified surgery was reputed not to be able to accomplish the very properly demanded cure. An accurately scientific method of preventing and aborting common cold is available, and we are in a position to say now that no catarrhal infection need ever become chronic. Anterior poliomyelitis can be so treated in the acute phases that the patient can be restored with little

or no damage to his musculature. The causative microbes can always be found.

I am sure Sir Farquhar will think that such a disease as disseminated sclerosis is an absolutely incurable condition. I can assure him that it is not so, that the cause can always be found, the infection of the spinal cord arrested, and the patient restored to his normal avocations. And so with practically all other microbial diseases that are now considered incurable. I expect these assertions of mine to be received with the usual derision, but I warn authoritative members of my profession that the writing is on the wall, and that they had better turn to the study of the production of "cures" if they wish us to survive as a profession.

I am, Sir, yours faithfully,

W. M. CROFTON.

University College, Dublin, Oct. 7th, 1929.

HARMINE OR HYOSCINE FOR ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—In your issue of Sept. 28th (p. 647) Dr. T. R. Hill and Dr. C. Worster-Drought discuss the treatment of chronic encephalitis with harmine and contrast their results with those reported by Rustige in Germany. Although Rustige does not claim that his findings bring harmine within the range of practical therapeutics, yet the discrepancy between his observations and the more recent ones remains to be accounted for. May it not rest upon the form and duration of the previous treatment that these different groups had undergone? The cases reported in your columns had been treated with hyoscine hydrobromide gr. 1/100 hypodermically three times daily, for how long is not stated. Rustige's patients had been treated with "scopolamine-atropine," how much or how long again we are not told. Hyoscine, I think, has a greater psychical effect than atropine, habit is more readily established, and in some cases it seems that its influence is very largely subjective. Under the circumstances and in default of fuller information it seems reasonable to suggest that the patients of Hill and Worster-Drought had become more dependent on the treatment in force before the change than were those of Rustige. The insistence of the encephalitic who is under treatment by hyoscine on his need for hyoscine seems to offer a serious obstacle to successful results with any alternative. He is acutely aware of all his objective manifestations, and if he believes that hyoscine keeps them in abeyance he may quite conceivably recall every one when his hyoscine is withdrawn, for his memory of detail is far better than that of the general run of patients. That there should be, as Drs. Hill and Worster-Drought describe, a rapid improvement on resumption of hyoscine does not negative this suggestion.

I am, Sir, yours faithfully,

Dundee, Oct. 3rd, 1929. J. M. STALKER.

LIVER TREATMENT IN SUBACUTE COMBINED DEGENERATION OF THE CORD.

To the Editor of THE LANCET.

SIR,—In his review of the nervous and mental aspects of pernicious anæmia (THE LANCET, Sept. 28th, p. 643), Dr. Douglas McAlpine criticises an article by Dr. M. M. Suzman and myself on subacute combined degeneration of the cord. While in agreement with him that the type with pyramidal involvement and little anæmia is more resistant to liver treatment, we have found that many of the spastic cases with marked anæmia have done very well indeed. We have re-examined our cases after an average period of 16·6 months' liver treatment, and in two further cases, making five in all, extensor plantar responses have become flexor in type. We have had no occasion to modify our opinions as to the good results obtained in subacute combined degeneration with sufficient liver dosage, provided that there is no urinary or dental sepsis. It is essential, however, that the cases be followed up for a sufficient length of time, as the effects on the nervous system may not be apparent for months after the anæmia has disappeared. It must be emphasised also that the optimum amount of liver required for improvement in the nervous phenomena is considerably in excess of the minimum amount required to combat the anæmia.

Dr. McAlpine wishes to draw conclusions with regard to the degree of anæmia in our non-improved cases. A careful study of the article will render it obvious that the reasons for failure to improve in these were, not the absence of a marked anæmia, but the inadequate dosage of liver, and in some the presence of septic complications. We have not found the administration of hydrochloric acid to affect the rate of improvement; the majority of our improved cases had none. Its use, however, has been found beneficial at times for gastric symptoms.

In conclusion, may I point out an error on p. 646 in quoting our report. The sentence (col. 2, line 34) should read, "of the 31 cases that had no liver, 28 died within an average period of 14·6 months (not 4·6 months) from the onset of the disease."

I am, Sir, yours faithfully,

C. C. UNGLEY, M.D., M.R.C.P.

Newcastle-on-Tyne, Oct. 4th, 1929.

ABDOMINAL TENDERNESS AND UNNECESSARY OPERATIONS.

To the Editor of THE LANCET.

SIR,—In the note on this subject, on p. 740 of your last issue, your occasional correspondent in the United States describes Dr. J. B. Carnett's teaching as "certainly heretical." I am amazed at this late date to find such a statement in print. I have held these views and used the same tests as Dr. Carnett for some years, and find that the condition he describes is very prevalent. Because tender nerve segments occur in the abdomen and chest the profession, as a whole, have accepted the work of Head and Mackenzie as interpreting that the disturbance is due to disease in one or other organs innervated by that spinal segment. If, however, the pains are complained of in an extremity, then the diagnosis is neuralgia or neuritis!

I am, Sir, yours faithfully,

R. CHALMERS, M.D., F.R.C.S.E.

Darlington, Oct. 4th, 1929.

TRELOAR CRIPPLES' HOSPITAL.—The work of replacing the wooden wards at Alton has now begun. There are to be five ward blocks of 60 beds each, and each ward unit provides for two wards of 24 beds each, two wards of four beds each, and four cubicles. They will face south to a wide terrace nearly 1000 feet long, and the large wards will have folding doors to enable them to be used as open-air wards opening upon a verandah glazed with Vita-glass. The administrative block will be on the north side.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The opening lecture of a series on Common Complaints will be delivered by Dr. F. G. Chandler on Monday, Oct. 14th. Particulars of this and other lectures during the coming week will be found in our Medical Diary Sixteen lectures intended for candidates for the M.R.C.P examination will be held at 8.30 P.M. on Tuesdays and Fridays, from Oct. 15th to Dec. 6th, at the rooms of the Medical Society of London. From Oct. 14th to 26th a morning course will be given at the Hospital for Sick Children, and between the same dates there will be a course in gynæcology at the Chelsea Hospital. An intensive course will be held at the Central London Throat, Nose and Ear Hospital from Oct. 14th to Nov. 2nd; and an intensive course in medicine, surgery, and the specialties at the Metropolitan Hospital from Oct. 21st to Nov. 2nd. The latter course is intended to appeal to practitioners. Further information about special and general courses may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W.1.

Obituary.

THOMAS JENNER VERRALL, M.R.C.S. ENG., LL.D. ABERD.,

LATE CHAIRMAN OF REPRESENTATIVE BODY, BRITISH MEDICAL ASSOCIATION.

WE regret to announce the death on Oct. 4th of Sir Jenner Verrall, one of the best-known workers in the country for the advancement of the whole medical profession.

Thomas Jenner Verrall was born in 1852 at Brighton, the second son of Henry Verrall, a well-known Brighton solicitor, his elder brother being Arthur Woollgar Verrall, the famous Cambridge Greek scholar. Jenner Verrall was educated at Marlborough, and on leaving school in 1869 proceeded to St. Bartholomew's Hospital, whence he duly qualified in 1876. He had previously gone through a part of his medical training at the Sussex County Hospital, and shortly after qualification was elected surgeon to that institution, a post which he held until 1912, when he was elected consulting surgeon. As a practitioner he won from the start the esteem and confidence of a large circle of patients and friends, and when, not long before the outbreak of war, he retired to Bath, at the age of 60, he set himself to further assiduously and assist practically the development policy of the British Medical Association, which had its origin in the reconstitution of that body in 1902. He had already for ten years studied the interests of the Association in connexion with the medical profession at large, had been elected to the Council and discharged many local responsibilities, and now the leisure of retirement gave him further opportunities of working along lines he loved.

To enumerate the many committees of the Association upon which he served would become tedious from the mere length of the list; it must suffice to say that wherever the conduct of medical practice came into contact with the constitutional or social life of the country to an extent that warranted the institution of a committee for the collection of information or the furtherance of reform, Verrall was always a prominent member of that committee. And to all the varying subjects which thus came within his ken he contributed sagacious counsel which gained in acceptance from the possession of a winning manner, a command of witty words, and obvious sincerity. A member of the Council of the Association since 1893, from 1913 to 1915 he was chairman of the Representative Body, and while occupying that responsible post he was the recipient of the gold medal of the Association in acknowledgment of his services. Of his multifarious Association committees he was at different times chairman of the Organisation, the Medico-Political, and especially of the State Sickness Insurance and the Central Medical War Committee, and his work on the last two was prominent. The institution of national insurance, owing to the sharply divided opinions, both on principle and in detail, as to the merits and demerits of the new legislation, placed the medical profession, and especially the British Medical Association, in a difficult position; while it was felt at the time that the Association was especially fortunate in having a competent body of men prepared to deal with the recurring professional difficulties, among whom none earned, or deserved, higher credit than Verrall and the late Dawson Williams. The Insurance Acts were not in working order when the war broke out, and almost immediately it was realised that much of the available strength of the medical profession would have to be used, and used over a considerable period, for military service, largely with the forces abroad, while the maintenance of the general health of the country was as necessary for the carrying on of hostilities as for the preservation of social conditions. The problem briefly was how far it would be possible to denude the country of medical service while preserving a level of general safety, and how at the same time to use those who, by economical arrangement could be set free for military objects, in the most efficient way. A prompt and fair arrangement of recruiting had to be instituted, and to this end the Central Medical War Committee was formed, as a medium between the medical profession on the one hand and, on the other, the War Office and the home population. The circumstances of each locality, and of each medical man residing therein, were inquired into, and as prompt and fair way as possible under which to adjust national claims and individual rights was arrived at. Verrall was chairman of the Committee, and presided over its deliberations with firmness and tact, conducting its complicated business with an expedition that was necessary, even while he showed himself ready in all circumstances to provide a clear and detailed explanation of any decision at which the Committee arrived. At the close of the war his energy and industry were rewarded with a well-won knighthood.

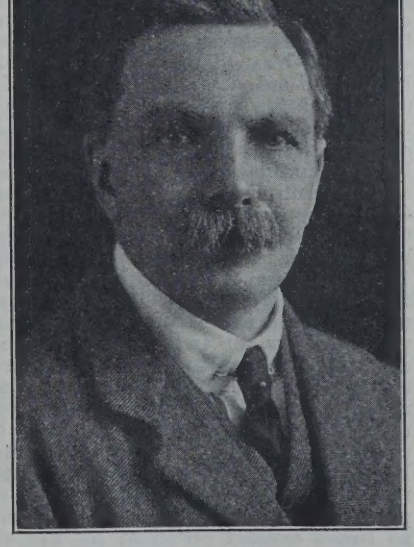
Verrall was first elected a Direct Representative for England and Wales on the General Medical Council in 1911, occupying thus a seat on that body for the unusual duration of 18 years. In discharging his duties on the Council he was never forgetful that he represented the medical profession as a whole and not the Association, and the vote of thanks which was accorded to him at the last meeting of the Association, upon his retirement from the Council, was in accord with a universal feeling in the profession that he had served the public, as well as his own calling, admirably in many important and responsible capacities.

His death occurred, at the age of 77, at East Lodge, Leatherhead, where he had lived for some years.

WILLIAM GORDON, M.D. CAMB., F.R.C.P. LOND.,

LATE SENIOR PHYSICIAN TO THE ROYAL DEVON AND EXETER HOSPITAL.

ON Oct. 1st, at a nursing home in Exeter, the well-known physician, William Gordon, died as a sequel to a severe attack of influenza in his sixty-seventh year. He was known for his scientific equipment and his zealous pursuit of knowledge, not only in the West of England, but throughout the country.



DR. WILLIAM GORDON.

William Gordon was born at Strabane in 1863, son of Mr. George Gordon, J.P., and was educated privately with such good effect that he entered Trinity College, Cambridge, with an exhibition which was later transformed into a scholarship. He justified his boy's promise by securing a first-class in both parts of the Natural Science Tripos, and later pursued his medical studies at University College Hospital, where he was a house physician, and Heidelberg. He qualified as M.B., B.Chir. Camb. in 1890, became M.R.C.P. Lond. in 1891, proceeded to the doctorate in 1894, and in 1903 was elected F.R.C.P.

Gordon commenced medical practice in Exeter, the city in which he passed all his professional life. Early elected to the staff of the Royal Devon and Exeter Hospital, he held also in the Exeter area the posts at various times of physician to the West of England Eye Infirmary and physician to the Exeter Dispensary. His learning and keenness commanded, almost from the beginning, a large domestic and consulting practice, while as a climatologist he was known throughout the scientific world. His deep interest in the subject of tuberculosis was closely associated with his views upon the interplay of meteorological conditions with the incidence of disease. Some of the conclusions which he arrived at were bold, and did not escape challenge, but his investigations into the cause and effect of phthisis in the western counties, and his intensive study of the connexion between the ravages of the disease and the prevalence of certain atmospheric conditions, brought up for consideration many points which too often escape attention. He was as enthusiastic here as he was on the subject of the diagnosis of cancer, and, like all enthusiasts, he made statements which were rather the result of personal belief than of actual proof, but of his intellectual capacity and of his complete sincerity none of his critics had ever any doubt. The Samuel Hyde Lectures on the Place of Climatology in Medicine, delivered in 1913 before the Balneology and Climatology Section of the Royal Society of Medicine, contain in brief his views on a many-sided subject; these were published in THE LANCET on delivery, and were recognised by readers as containing much valuable and suggestive teaching.

Gordon took an active part in the affairs of the British Medical Association, was President of the Section of Medicine at the annual meeting in 1907, and, in particular, was Chairman of a Subcommittee on Army Reform, a subject which deeply interested him. In this connexion, indeed, he is known to have given the late Lord Lansdowne, then Secretary of State for War, much support during the erection of the Army Medical Service into the Royal Army Medical Corps.

Dr. F. A. ROPER sends us for publication the following tribute to his dead friend: "I am glad of this opportunity to pay sad respect to the memory of one whom I have known all my life, and who has been my colleague at the Royal Devon and Exeter Hospital for 16 years. The grief following the loss of one who, during 38 years of active service for the hospital, had built up a commanding reputation in the South-West of England as a physician will readily be understood. At the bedside the dominant characteristic of his work was thoroughness and, arising from that, an earnest striving for precision; and, examination completed, it was then that the knowledge accumulated by his wide experience and lifelong and unremitting study showed themselves. For Gordon remained a student devoted to his books till the very end, and even more intensively so after his retirement from the active staff of the hospital 15 months ago. For his hospital work ever received from him a generous share of his time, and it was no unusual occurrence for him to visit an individual patient daily, or twice daily, where there was any doubtful or difficult problem of diagnosis or treatment to be faced. And his conscientiousness was at once revealed and illustrated to anyone who saw the classified records he kept for his own use of hospital and private cases alike. As a colleague the strength of his firmly marked and impulsive personality showed itself in an unswerving loyalty to, and care for the prestige and honour of his profession, a loyalty which at times evoked criticism by the very forcefulness of its expression; but, ever impatient as he was of opposition, this daunted Gordon not at all, but rather acted as a spur to increased earnestness. As a junior colleague, and friend of his in the personal sense, I can testify that during many years spent in intimate touch with him, frequently over difficult and controversial hospital and private problems, I never on any single occasion experienced from him any but the most scrupulous courtesy, kindness, and encouragement. He ever gave of his best, as the devotion and reliance he commanded of his patients further testified. His intellectual activities outside his profession covered a remarkably wide range. He was an enthusiastic and deeply-read historian, with an extremely retentive memory for facts; a student of architecture; and possessed a considerable degree of artistic ability. Until latterly he was a keen musician, and among his more intimate friends was known as a pianist of sympathetic touch and considerable interpretative insight; while in another direction his book of poems on the war—produced for private circulation only—evidenced among many other traits his admiration and respect for the private soldier. His literary ability was further displayed in his beautifully phrased concise speeches at gatherings, both scientific and social, and his scholarly attainments and methods generally make the gap caused by his loss one that will be felt for many a long day to come. With us his name has been a household word."

Dr. Roper's words set out Gordon's striking characteristics, and the accompanying portrait, taken in middle life, agrees with them.

The grief in Exeter and the surrounding district was accentuated by the unexpected termination to an attack of influenza, as Gordon was carrying on practice in his customary good health until quite recently. He leaves a widow, and an only son of 25, who is in India.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified: Surg. Lt.-Comdr. T. N. D'Arcy to *Warspite* (on transfer of flag); and Surg. Lts. L. J. Corbett to *Warspite* and L. P. Spero to *Queen Elizabeth* (on transfer of flag).

ROYAL ARMY MEDICAL CORPS.

Bt. Lt.-Col. F. D. G. Howell to be Asst. Dir.-Gen., Army Med. Servs., War Office, vice Col. W. R. P. Goodwin (vacated).

Maj. W. R. O'Farrell retires on retd. pay.

Capt. A. R. Barlas to be Maj.

Capt. W. Parsons, late R.A.M.C., is granted a temp. commn. in the rank of Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. J. E. H. Sawyer, having attained the age limit, relinquishes his commn. and retains his rank.

ROYAL AIR FORCE.

Flight Lt. E. J. Jenkins resigns his permanent commission.

INDIAN MEDICAL SERVICE.

Maj. Gen. W. H. S. Nickerson, V.C., late R.A.M.C., to be Dir. Med. Services, India.

COLONIAL MEDICAL SERVICES.

The following appointments are notified: Dr. P. D. Johnson and Dr. J. E. McMahon, Medical Officers, Federated Malay States; Dr. A. W. H. Smith, Assistant Medical Superintendent, Tonjong Rambutan Central Mental Hospital, Federated Malay States; Dr. L. B. Haye, Medical Officer, and Dr. A. W. Rose, Pathologist, Nigeria; and Dr. E. J. Thomas, Medical Officer, Northern Rhodesia.

The following appointments in the West African Medical Staff have also been notified: Dr. G. W. Aynes, Dr. W. C. Davidson, Dr. C. N. Latham, and Dr. C. H. C. White, Medical Officers, and Dr. J. C. B. Craig and Dr. A. D. Cust, Medical Officers of Health.

THE King has granted permission to Lieut.-Colonel Sir Charles H. Bedford, I.M.S. (retd.), to accept and wear the insignia of Knight Grand Cross of the Order of Civil Merit of Spain, conferred upon him by the King of Spain. We understand that the only other British subjects who have received this honour are the Maharajahs of Patiala and of Kapurthala, on the occasion of their State visits to Madrid last year. Apart from other services to Spain for several years past, Sir Charles Bedford originated the King Alfonso XIII Chair of Spanish Studies at the University of Oxford in 1926, commemorating the Prince of Wales's visit to Spanish South America.

Medical News.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were successful:—

D.P.H.

J. L. Clegg, R. L. Corlett, R. W. Eldridge, A. B. Follows, B. S. Jarvis, J. C. McVittie, R. J. Orsmby, D. E. P. Pritchard, D. Regan, and F. C. Speechly.

THE RED CROSS AND MUSTARD GAS.—The International Committee of the Red Cross offers a prize of 10,000 Swiss francs for a reagent capable of distinguishing without any ambiguity the presence of mustard gas in a concentration of 0·07 mg. per litre of air. The reaction should be characteristic and the reagent and the apparatus submitted should be simple to manufacture and moderate in price when turned out in large quantities. The jury which will decide on the award of the prize will consist of Prof. F. Haber, of Berlin, Sir William J. Pope, F.R.S., of Cambridge, Prof. M. F. Swarts, of Ghent, and Prof. M. G. Urbain, of Paris. Competitors must send their proposals in proper form to the Secretary of the International Committee of the Red Cross, in Geneva, before Dec. 31st, 1930. The reagent adopted will be called by its author's name and will become the property of the International Red Cross.

CHARING CROSS HOSPITAL POST-GRADUATE COURSE. A successful week-end post-graduate course was held in the Medical School on Oct. 5th and 6th, more than a hundred former students of the hospital attending. On Oct. 5th, in the morning, Mr. H. S. Clogg opened the course with a lecture on Diseases of Gall-bladder, and was followed by Mr. Bright Banister on Some Obstetric Difficulties, and by Dr. D. Forsyth on Some Everyday Neuroses. In the afternoon Mr. P. L. Daniel lectured on Common Ailments of the Rectum; Dr. F. G. Chandler on Puncture of the Chest: Its Occasions and Technique; and Dr. J. M. H. MacLeod on Tuberculosis of the Skin. On Sunday, Oct. 6th, the lectures given were as follows:—Mr. H. E. Batten: Fractures. Dr. Gordon Holmes: Syphilis of the Nervous System. Mr. Norman Lake: Injection Treatment of Varicose Veins. Dr. Howard Jones: A Short Review of Anæsthetic Practice. Dr. W. J. Adie: Early Symptoms of Some Common Nervous Disorders. Mr. E. D. Davis: Ear, Nose, and Throat Work in General Practice.

CHARING CROSS HOSPITAL DINNER.—The annual dinner of past and present students coincided with the first week-end post-graduate course ever held at the hospital, and was for this reason more than usually well attended. Nearly 160 covers were laid at Gatti's Restaurant on the evening of Oct. 5th when Dr. J. M. H. MacLeod took the chair and the toast list was agreeably short in order to give time for an admirable programme of music arranged by Dr. Taylor Harris. Mr. Norman Lake, in proposing "Hospital and Medical School," spoke of the completion of the additional wing which would relieve the general wards of overcrowding by providing a complete unit for the skin, orthopædic, dental, and other departments. Mr. J. Bright Banister, who replied in the absence, through illness, of the Dean, Dr. F. H. Young, recounted the signs of prosperity in the school and the prospect of an increasing number of students. Dr. W. C. Bosanquet proposed "The Chairman," who made a graceful reply. Among the items in the musical programme were three songs by Dr. Harris himself rendered with refreshing vigour and faultless technique, and a version, by Mr. Nelson Jackson, of Hamlet describing a cocktail.

ST. THOMAS'S HOSPITAL DINNER.—The annual dinner was held on Oct. 4th at St. Thomas's House, with Dr. H. G. Turney in the chair. There was an attendance of old students to the number of nearly 200, of every degree of seniority, who evidently appreciate the amenity of being able to meet and dine together in their own house. Among the invited guests were the Directors-General of the three medical services, the President of the Royal College of Physicians, the medical officer of health and the coroner for the area, a representative of London University, the headmaster of the Merchant Taylors School, and the architect of the new building. Dr. Turney, in proposing "Hospital and Medical School," opened with an amusing dissertation on doctors who are not doctors, but have deviated before or after qualification into one or other of the pleasant by-ways of life. He noted the curious fact that after being patron saint of the hospital for 300 years Thomas à Becket had been supplanted by the apostle of that name, and he pleaded with the treasurer for the restitution of the all-British patron. The partial eclipse consequent on the transplantation of the ancient hospital from the borough to its present site had, he felt, now fully disappeared. Sir Arthur Stanley, in replying, offered to look round for the best saint of the name, and spoke of the past year as one of extreme importance in the history of the hospital. For 12 years past he had been receiving demands on every hand for more accommodation. They were not allowed to build bridges, to approach the new site on the south side of Lambeth Palace-road, and tunnels must be so deep as to run the risk of flood. The new scheme would therefore transplant the medical school so as to build in its place a worthy out-patient department adjoining the wards. A joint appeal was shortly to be issued for certainly not less than £500,000, in the collection of which he looked hopefully to the aid of St. Thomas's men. The Dean, Prof. L. S. Dudgeon, replied for the medical school, sketching in a few sympathetic words the careers of the great men who had been lost to the school in the past year—Sharkey, Mackenzie, Caiger, George Maling, V.C., E. L. Atkinson, R.N., a member of Scott's expedition—and passing on to those retiring from the staff, especially Dr. J. S. Fairbairn, a man of ideas, a first-rate teacher and organiser, and a fine physician. Dr. H. Yellowlees had succeeded Dr. W. H. B. Stoddart, Prof. S. J. Cowell had delivered his first course on dietetics, Sir George Makins had received the honorary gold medal of the Royal College of Surgeons, a worthy successor of Lister and Paget. Finally he remarked that the new medical school would be six storeys in height, would cost £220,000, and would contain on the top 24 bedrooms supplementary to those in St. Thomas's House. Sir Percy Sargent proposed "The Guests," and Sir John Rose Bradford replied; it was, he said, a pleasing feature to entertain guests from other schools who had not much opportunity of meeting. The toast of "The Chairman" was proposed by Dr. A. E. Russell, who spoke of the service which Dr. Turney, after ten years of retirement, was still rendering to the hospital in his attendance on the nursing staff and as an almoner. The dinner concluded with the presentation of an illuminated address and a cheque to the school bedell, whose service with that of his father and grandfather covered a period of over 100 years.

ST. GEORGE'S HOSPITAL DINNER.—The annual dinner of the hospital and medical school was held on Oct. 1st at the Hyde Park Hotel with Dr. Digby Cotes-Preedy, K.C., in the chair. More than 100 past and present St. George's men attended, and a most enjoyable evening was spent. In reply to the toast of the "Hospital and Medical School" the Dean, Dr. Anthony Feiling, stated that the school had had a successful year, and that an excellent entry of new students was assured. The health of "The Chairman" wittily proposed by Mr. Ivor Back was replied to in like vein.

ST. MARY'S HOSPITAL DINNER.—Sir John Broadbent presided at the annual dinner at the Trocadero Restaurant on Oct. 4th, when the toast of "St. Mary's Hospital and Medical School" was proposed by Lieut.-Colonel H. E. Verey, as chairman of the Hospital Board. After referring to the large sums the School had received by the gift of Lord Beaverbrook and the bequest of Lord Revelstoke, Colonel Verey said it was hoped that rebuilding would begin early next year. If possible, work would start at the same time on the new inoculation department, for which Lord Iveagh's generous donation of £25,000 over a period of seven years would bring in a total of about £40,000. On the site of the old medical school a nurses' home would be built to accommodate four or five hundred, whilst the present nurses' home would provide ideal accommodation for paying patients—a most urgent necessity. The extensions of the hospital coming into operation this year had cost £63,000, of which £62,000 had been raised. The operating theatres were now as modern as any in the country, and the increase in the number of beds would mean better service for the locality. Colonel Verey congratulated the School on winning the Inter-hospital Cricket Cup, which had been absent since 1899. He went on to pay a tribute to Mr. Warren Low, whom he described as a tower of strength to the Hospital Board. He trusted that after Mr. Low's retirement from the surgical staff in November the Board would continue to enjoy his wise advice and tactful help. Another resignation which would be deeply regretted was that of Mr. Leslie Paton from the post of ophthalmic surgeon. In his reply, Dr. C. M. Wilson, the Dean, said it had been a wonderful year for the School, whose record, indeed, during the last ten years had been a romance. The late war had made the task of every medical school very difficult; expenses had been quadrupled, whilst income remained the same. Those who held that there were too many medical schools had welcomed this situation because they thought it would eliminate the weakest, but it was remarkable that the two most threatened with destruction—namely, the Middlesex and St. Mary's—were the two which had gone ahead most of all in recent years. St. Mary's had secured £150,000 for new school buildings, and hoped to get the remainder needed. They were out to make it the best school in London—best not because it had the best buildings

or even the best staff, but because it had the best students. Sir John Broadbent, whose health was drunk with musical honours, responded entertainingly to the toast, and took occasion to recall the merits of many of his colleagues. The proceedings closed with a speech from the captain of the cricket team, the health of which was proposed by the chairman.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY, LTD.—The annual meeting of this Society was held on Oct. 7th under the chairmanship of Dr. F. J. Allan. The chairman in his address stated the report showed the Society had had a successful year. The premium income in the Sickness Fund was now £60,700. The sickness claims paid had increased from £31,000 to £38,196, chiefly on account of the influenza epidemic, for which claims were paid amounting to £6200. The total of the funds at the close of the year was £383,761. New life assurance policies were issued for £243,460 gross, and the funds had increased to £222,722. The total premium income of the Society was £98,050, and expenses of administration £13,348. The management expenses showed a gratifying fall in the ratio to premium income from 13·8 per cent. to 13·4 per cent. The gross rate of interest earned over the whole funds was £5 0*s.* 3*d.*, and net rate £4 3*s.* 2*d.* Dr. Allan stated that the investments of the Society were in a sound condition, and the auditors certified that the market prices of the stocks at June 30th, 1929, were £11,786 in excess of the values stated in the balance-sheet. The total funds of the Society now amounted to £628,588.

Dr. Harvey Hilliard, in moving three resolutions in respect of permanent sickness insurance contracts to age 70, fixing the date of the annual meeting, and printing and publishing a list of members, said that when he sent these to the office to be placed on the agenda of the meeting he was informed that they were matters arising out of the report, but he maintained that this was not the correct procedure. The chairman replied that he was informed by the legal advisers of the Society that the procedure adopted was in accordance with that usually adopted by other companies, but that the Board was prepared to consider a scheme for extending permanent sickness insurance to age 70. In the matter of fixing the date of the meeting, it was decided that the date should be published in the medical press six weeks beforehand. The motion for publishing a list of members being put to the meeting was lost by a large majority. The report was adopted, and the two retiring directors, Sir William Willcox and Mr. W. H. Dolamore, were duly re-elected. Dr. Harvey Hilliard's motion that all directors of the Society should retire at age 65 was withdrawn by him. After a vote of thanks had been unanimously passed to Dr. Allan the meeting closed.

GRESHAM LECTURES.—Four lectures on How England Learned to Control Disease will be given by Sir George Newman at 6 P.M. on Oct. 15th, 16th, 17th, and 18th, at Gresham College, Basinghall-street, London, E.C.

GUILD OF ST. LUKE.—The Annual Medical Service will be held at Westminster Abbey on Sunday, Oct. 20th, at 6.30 P.M., when the Bishop of Bradford will be the preacher. Medical men, women, and students are invited to attend. Those wearing academic dress will not require tickets, but will proceed to the Jerusalem Chamber and robe there. Tickets for others and their friends may be had from the Secretary of the Guild, King's College, Strand, London.

NATIONAL COUNCIL FOR MENTAL HYGIENE.—A conference on mental health will be held in the Central Hall, Westminster, from Oct. 30th to Nov. 2nd. The subjects to be discussed include Sex Education, the Personal Equation in Industry, the Child and the Parent, and Delinquency. There will also be group discussions on the Working of the Juvenile Courts, the Relation of the Work of Public Health Nurses and Social Workers to the Mental Health of the Community, and the Problem Child at Home and in School. Further particulars may be had from the Secretary of the Council, 78, Chandos House, Palmer-street, London, S.W. 1.

BRITISH SCIENCE GUILD.—The Norman Lockyer Lecture for 1929 will be given at the Goldsmiths' Hall, Foster-lane, London, E.C., at 4.30 P.M., on Tuesday, Nov. 19th, by Sir Walter Fletcher, F.R.S., Secretary of the Medical Research Council, who will speak on certain aspects of medical research and their applications.

A lecture has been established in memory of Sir Alexander Pedler, F.R.S., who was for many years honorary secretary of the Guild. The first Alexander Pedler Lecture will be given at Manchester, at 5.30 P.M., on Nov. 26th by Mr. G. C. Simpson, F.R.S. The subject will be Past Climates, and the lecture will be held under the auspices of the Manchester Literary and Philosophical Society at 36, George-street.

POST-GRADUATE COURSE ON ORTHOPÆDICS.—A fortnight's course will be held at the Royal National Orthopædic Hospital, London, from Nov. 18th to 30th. Particulars will be found in our advertisement columns.

INTERNATIONAL LEAGUE AGAINST TRACHOMA.—At the International Ophthalmological Congress recently held in Holland (see THE LANCET, Sept. 21st, p. 633) it was resolved to form an International League against Trachoma. Prof. Emile de Grósz, of Budapest, was elected president, and Dr. F. Wibaut, of Amsterdam, secretary, and they were entrusted with the formation of a committee from among the delegates of the ophthalmological societies and leagues already in existence. Prof. de Grósz's address is Baross-u., 10, Budapest VIII.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 28TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 108 (last week 119); scarlet fever, 2590; diphtheria, 1367; enteric fever, 101; pneumonia, 720; puerperal fever, 46; puerperal pyrexia, 86; cerebro-spinal fever, 10; acute poliomyelitis, 37; acute polio-encephalitis, 4; encephalitis lethargica, 12; continued fever, 1; dysentery, 11; ophthalmia neonatorum, 106. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Oct. 1st–2nd was as follows:—Small-pox, 143 under treatment, 10 under observation (last week 122 and 19 respectively); scarlet fever, 1738; diphtheria, 1764; enteric fever, 18; measles, 172; whooping-cough, 196; puerperal fever, 24 (plus 8 babies); encephalitis lethargica, 125; poliomyelitis, 5; "other diseases," 13. At St. Margaret's Hospital there were 19 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (0) from enteric fever, 12 (2) from measles, 6 (0) from scarlet fever, 15 (3) from whooping-cough, 31 (9) from diphtheria, 186 (36) from diarrhœa and enteritis under two years, and 23 (5) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa (which have increased by a bare quarter), 31 were reported from Birmingham, 18 from Liverpool, 12 from Sunderland, 11 from Hull, 8 from Manchester, 7 from Middlesbrough, and 6 from West Ham; while Glasgow, Dublin, and Belfast reported 15, 8, and 7 respectively. The deaths from enteric fever were reported from Wimbledon, Newcastle-on-Tyne, and Swansea.

The number of stillbirths notified during the week was 236 (corresponding to a rate of 35 per 1000 births), including 43 in London.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 14th.—5 P.M., WAR. Presidential Address by Group-Captain Hardy V. Wells, R.A.F.

TUESDAY.—8 P.M., PATHOLOGY. Prof. A. E. Boycott: The Blood as a Tissue (Presidential Address). 8.30 P.M., ORTHOPÆDICS. Dr. Fred Albee (New York) will give an Address on Original Surgical Applications of the Bone Graft, illustrated by lantern slides and moving pictures. Members of the Section of Surgery are cordially invited to attend.

WEDNESDAY.—8 P.M., TROPICAL DISEASES. Dr. G. Giglioli: Paratyphosus Infections in British Guiana—Sterile abscess in Treatment—Demonstration of Specimen. Dr. W. Broughton-Alcock: Section Showing Structures Morphologically Resembling Spirochætes of a Species Common to the Mouth, lying deep within its mucous membrane (for opinion).

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.)

FRIDAY.—8 P.M., OBSTETRICS, COMPARATIVE MEDICINE. Special Discussion on Causes of Early Abortion and Sterility. Openers: Prof. A. Robinson and Prof. Beckwith Whitehouse (Obstetrics); Mr. J. R. Barker and Mr. O. Stinson (Comparative Medicine). 8.30 P.M., ELECTRO-THERAPEUTICS. Presidential Address by Dr. C. A. Robinson.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 14th.—8 P.M., Annual General Meeting. 8.30 P.M., Mr. Donald Armour: Some of Lettsom's Contemporaries (Presidential Address).

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Oct. 17th.—7.45 P.M., Demonstration of some of Dr. Low's Original Preparations showing the Development of Filariæ in Mosquitoes.—8.15 P.M., Dr. G. Carmichael Low: A Retrospect of Tropical Medicine from 1894–1914 (Presidential Address).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

FRIDAY, Oct. 18th.—5 P.M., Sir Arthur Keith: Specimens of Trephining—Ancient and Modern.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 14th, to SATURDAY, Oct. 19th.—MEDICAL SOCIETY OF LONDON. Mon., 5 P.M., Dr. F. G. Chandler: The Treatment of Pulmonary Tuberculosis. No fee. Tues., 8.30 P.M., Dr. Parsons-Smith: The Symptoms and Signs of Myocardial Failure. Fri., 8.30 P.M., Dr. Parsons-Smith: The Treatment of Heart Disease. ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN. Mon. 2 to 4 P.M., Dr. W. Griffith: Demonstration. No fee.—SAMARITAN HOSPITAL, Marylebone-road, N.W. Thurs., 2.30 P.M., Mr. Andrew McAllister: (Gynæcology) Demonstration. No fee.—HOSPITAL FOR TROPICAL DISEASES, 25, Gordon-street, W.C. Tues. and Thurs., 2 P.M., Lecture-demonstrations by Dr. Manson-Bahr and Dr. Carmichael Low.—CHELSEA HOSPITAL, Arthur-street, S.W. Special Courses in Gynæcology for two weeks.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Special morning course.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Intensive Course. Further particulars from the Fellowship of Medicine.

LONDON HOSPITAL POST-GRADUATE COURSE.

WEDNESDAY, Oct. 16th.—10.15–10.45 A.M., Dr. Russell Brain: The Therapeutic Uses of Luminal. 11–11.30 A.M., Dr. W. W. Woods: The Causes of Sudden Death (with specimens). 11.30–11.45 A.M., Dr. S. Phillips Bedson: Recent Work on Vaccination. 12–12.45 P.M., Mr. Hugh Lett: Hæmaturia. 1.30–2 P.M., Sir R. S. Woods: The Present Position of General Light Therapy. 2–3 P.M., Mr. W. S. Perrin: Demonstration of Cases Treated by Radium. 2–4 P.M., Mr. E. C. Lindsay: Surgical Operations. 2–3.30 P.M., Dr. George Riddoch: Demonstration of Neurological Cases. 3.45–4.30 P.M., Dr. John Parkinson: Non-valvular Diseases of the Heart (Cases and Lantern slides).

THURSDAY.—10–10.45 A.M., Dr. W. J. O'Donovan: Occupational Dermatitis (Lantern Demonstration). 11–11.45 A.M., Dr. Maitland-Jones: Infant Feeding. 11.55 A.M.–12.10 P.M., Dr. Donald Hunter: Modern Treatment of Lead Poisoning. 12.15–12.45 P.M., Mr. Alan Perry: Injection Treatment of Varicose Veins (Lecture and Demonstration). 1.30–2 P.M. Mr. H. S. Souttar: Radium and Its Surgical Application. 2–3.30 P.M., Mr. Souttar: Surgical Operations; Dr. R. A. Rowlands and Mr. J. D. Driberg: Ward Demonstrations. 3.45–4.30 P.M., Dr. O. Leyton: Diabetes.

FRIDAY.—10–10.45 A.M., Prof. A. W. M. Ellis: Use and Abuse of Intravenous Therapy. 11–11.45 A.M., Dr. P. N. Panton: Pernicious Anæmia. 12–12.45 P.M., Mr. Robert Milne: Pain in the Fore Part of the Foot. 1.30–3.30 P.M., Mr. A. J. Walton: Operations. 1.30–2.30 P.M., Dr. A. E. Clark-Kennedy: Cardiac Pain (Ward Demonstration). 2.30–3.30 P.M., Dr. Theodore Thompson: Ward Demonstration. 3.45–4.30 P.M., Mr. Eardley Holland: Uterine Hæmorrhage (Gynæcological Demonstration). 9 P.M., Dr. Ashley Daly: Methods of Anæsthesia (Demonstration).

SATURDAY.—10–10.45 A.M., Dr. Robert Hutchison: Dyspepsias of Childhood. 11 A.M. to 12 noon, Mr. Russell Howard: Ward Demonstration. 12–12.45 P.M., Mr. Walton: Place of Surgery in Lesions of the Stomach.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 14th.—12 noon, Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Adie: Disseminated Sclerosis.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Central Disorders of Vision.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Some Heredofamilial Diseases.

FRIDAY.—12 noon, Dr. Purdon Martin: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educational Methods (in Exercise Room).

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 14th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Oct. 14th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Ward Visit. 2 P.M., Mr. Donald Armour: Operations.

TUESDAY.—10 A.M., Medical Registrar: Ward Visit. 2 P.M., Dr. Shaw: Medical Out-patients. 4.30 P.M., (lecture), Mr. Tyrrell Gray: Surgical Aspects of Indigestion.

WEDNESDAY.—10 A.M., Dr. Owen: Children's Out-patient Department. 2 P.M., Mr. Tyrrell Gray: Operations. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. MacDonald: Genito-Urinary Out-patient Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Ward Visit. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Children's Medical Out-patient Department. Medical and Surgical Out-patients at 2 P.M., daily. Operations. Special Departments daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M. Special Classes in Anæsthetics and Operative Surgery.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 15th.—5 P.M., Dr. H. W. Barber: Bacteriology and Mycology.

THURSDAY.—5 P.M., Dr. H. G. Burford: Pathology Demonstration.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Oct. 18th.—4 P.M., Mr. A. Wylie: Gleanings and Impressions of Oto-Rhino-Laryngology.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 16th.—4.30 P.M., Mr. R. H. Jocelyn Swan: The Examination of a Urological Patient.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Oct. 16th.—3.30 P.M., Dr. R. King Brown: Prophylaxis Applied to Infectious Diseases.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 16th.—4 P.M., Dr. E. Graham Little, M.P.: Health and Conditions of Work of Medical Students.

FRIDAY.—5 P.M., Prof. R. A. Peters: Coördinative Bio-Chemistry of the Cell and Tissues (First Harben Lecture).

GRESHAM COLLEGE, Basinghall-street, E.C.

TUESDAY, Oct. 15th, and the following Wednesday, Thursday, and Friday.—6 P.M., Sir George Newman: How England Learned to Control Disease (Gresham Lectures).

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Oct. 14th.—5 P.M., Dr. R. J. Brocklehurst: Secretion of the Digestive Juices. (First of four public lectures).

KING'S COLLEGE, Strand, W.C.

TUESDAY, Oct. 15th.—5 P.M., Mr. J. W. Pickering, D.Sc.: Blood Plasma and Platelets (Second lecture).

THURSDAY.—5 P.M., Mr. J. A. Hewitt, D.Sc.: Metabolism of the Carbohydrates and Fats. (First of four lectures).

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL, Albert Embankment, S.E.

TUESDAY, Oct. 15th.—5 P.M., Dr. A. St. G. Huggett: Physiology of the Fœtus (Second lecture).

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

MONDAY, Oct. 14th.—6 P.M., Prof. T. Madsen (Copenhagen): Seasonal Variations of Epidemic Diseases.

WEDNESDAY.—6 P.M., Prof. Madsen: Milk Epidemics.

FRIDAY.—6 P.M., Prof. Madsen: Diphtheria Toxin and Antitoxin.

KING'S COLLEGE FOR HOUSEHOLD AND SOCIAL SCIENCE, Campden Hill-road, W.

FRIDAY, Oct. 18th.—5 P.M., Prof. V. H. Mottram: Human Nutrition (First of six lectures).

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 15th.—4.15 P.M., Dr. D. E. Core: Functional Pain.

FRIDAY.—4.15 P.M., Dr. G. Jessel: Differential Diagnosis of Pulmonary Tuberculosis (Illustrated by Skiagrams).

Appointments.

BLIGH, J. M., M.D. Liverp., M.R.C.P. Lond., has been appointed Hon. Consulting Physician to Southport Infirmary.

CHURCHER, D. G., M.D., B.S. Lond., a Medical Referee under the Workmen's Compensation Act for Eastbourne and Hastings County Court Districts.

CLAYE, A. M., M.D. Leeds, F.R.C.S. Eng., Honorary Obstetric Surgeon to Leeds Maternity Hospital.

DEARN, E. M., M.B., Ch.B. Sheffield, Assistant School Medical Officer to the Newcastle Education Committee.

JOHNSON, R. G., Certifying Surgeon under the Factory and Workshop Acts for Bristol District, Gloucester.

LOBBAN, G. M. D., M.B., Ch.B. Leeds, School Medical Officer, Essex County Council.

WATSON, JESSIE R., M.B., Ch.B. St. And., Assistant School Medical Officer, Sunderland.

Bolton Infirmary.—BIGGANE, E. F., M.B., Ch.B. N.U.I., and CRITCHLEY, S. E., M.B., Ch.B. Manch., Assistant Surgeons.

City of London Maternity Hospital, City-road, E.C.—FREEMAN, L. W., L.R.C.P. Lond., M.R.C.S., Resident Medical Officer; and PRICE, J. A., M.B., B.Ch. Belf., Assistant Resident Medical Officer.

Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Elder Professor of Anatomy and Histology. £1100.

Bath, Royal United Hospital.—H.P. At rate of £120.

Barnstaple Dispensary, Area of the County of Devon.—Tuber. O. £750.

Bedford County Hospital.—H.S. Also Asst. H.S. At rate of £175 and £130 respectively.

Bethlem Hospital, Lambeth-road, S.E.—Res. H.P. £25 per quarter.

Birmingham City Hospital for Infectious Diseases, Little Bromwich.—Temporary Asst. M.O. At rate of £300.

Birmingham, Queen's Hospital.—Res. Anæsthetist. £70–£100.

Birmingham, Selly Oak Hospital.—Cas. O. at rate of £200.

Birmingham and Midland Ear and Throat Hospital.—Asst. Surg. O. £200.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.

Bradford Royal Eye and Ear Hospital.—Jun. H.S. £120.

Bradford Royal Infirmary.—Hon. Asst. P. Also H.P. £150.

Brighton, New Sussex Hospital for Women and Children.—Hon. Asst. Ophth. Surg. Also Hon. Anæsthetist.

Cambridge House Infant Welfare Centre, Camberwell.—M.O. £1 11s. 6d. per session.

Canterbury, Kent and Canterbury Hospital.—Third Res. M.O. At rate of £125.

Carlisle, Cumberland Infirmary.—H.P. At rate of £155.

Chelmsford and Essex Hospital.—Res. M.O. At rate of £150.

Darlington County Borough.—Deputy M.O.H. £750.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Anæsthetist. £10 10s.

Exeter, Royal Devon and Exeter Hospital.—Aural H.S. and Cas. O. At rate of £120.

Glasgow, Woodilee Mental Hospital, Lenzie.—Jun. Asst. M.O. £300.

Great Yarmouth General Hospital.—Jun. H.S. £100.

Halifax Royal Infirmary.—Third H.S. At rate of £100.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S. Also Cas. M.O. and Cas. Surg. O. Each at rate of £100.

Hereford General Hospital.—H.P. At rate of £150.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Jun. H.P. for Frimley Sanatorium. At rate of £100.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Reg. £100. Res. M.O. Also H.P. At rate of £150 and £100 respectively.

Hôpital Français, 172, Shaftesbury-avenue, W.C.—Jun. Res. M.O. £100.

Huddersfield Royal Infirmary.—Jun. H.S. At rate of £150.

Hull Royal Infirmary.—Third H.S. Also Asst. H.P. At rate of £150 and £130 respectively.

Ilford Emergency Hospital.—Hon. Radiologist. £50.

Inverness Northern Infirmary.—Hon. Radiologist.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Loughboro' Junction Maternity and Infant Welfare Centre, 199, Sussex-road, S.W.—Medical Woman.

Macclesfield General Infirmary.—Second H.S. At rate of £150.

Manchester, St. Mary's Hospital—Four H.S.'s. Each at rate of £50.

Manchester, Baguley Sanatorium.—Sen. Asst. M.O. £500. Also Asst. M.O. £350.

Manchester, Salford Royal Hospital.—H.S. to Orthopædic Dept. Also Cas. H.S. Each at rate of £125.

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.

Metropolitan Ear, Nose, and Throat Hospital.—H.S. £150.

Metropolitan Hospital, Kingsland-road, E.—H.P.'s, H.S's., &c. Each at rate of £100.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Jun. Res. M.O. Also Asst. Cas. O. Each at rate of £100.

Miller General Hospital, Greenwich-road, S.E.—Orth. H.S. At rate of £150. Hon. Surgeon. Also Hon. Physician to Skin Dept.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Surgeon.

Norwich, Norfolk and Norwich Hospital.—H.P. £120.

Nottingham General Dispensary.—Res. Surg. £250.

Preston and County of Lancaster Royal Infirmary.—Res. Surg. O. £300. Also H.S. At rate of £150.

Prison Medical Service.—Medical Officer. Class II. £350.

Queen's Hospital for Children, Hackney-road, E.—H.P., Cas. O., and H.S. All at rate of £100.

Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.

Rotherham Hospital.—H.P. £180.

Royal Chest Hospital, City-road, E.C.—H.P. At rate of £100.

Royal Eye Hospital, St. George's Circus, Southwark, S.E.—H.S. Also Asst. H.S. At rate of £150 and £100 respectively.

Royal Free Hospital and London (R.F.H.) School of Medicine for Women, W.C.—Obstet. and Gyn. Unit. Sen. Asst. At rate of £350. Third Asst. £270. Path. Dept. Res. Asst. Path. £150.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Hon. Asst. Surg. Also Surg. Registrars. Each £105.

Royal Naval Dental Service.—Dental Officers.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Gynæcological Reg. Also H.S. At rate of £100.

St. Andrew's Hospital, Dollis Hill, N.W.—Sen. and Jun. Res. M.O.'s.

St. Helen's County Borough.—Tuber. O. £600.

St. John's Hospital, Lewisham, S.E.—Res. Cas. O. and Res. H.P. Each at rate of £100. Radiologist. Also Res. M.O. At rate of £100.

St. Mary's Hospital, Institute of Pathology and Research.—Research Studentship At rate of £200.

St. Peter's Hospital for Stone, Henrietta-street, W.C.—Radiologist. £25.

Salisbury General Infirmary.—Res. M.O. £150.

Sheffield, South Yorkshire Mental Hospital.—M.O. £400.

Southampton, Royal South Hants and Southampton Hospital.—Cas. O. At rate of £120.

Swanley, Kent, Alexandra Hospital for Children with Hip Disease. Res. Asst. M.O. At rate of £300.

University College Hospital, Gower-street, W.C.—Hon. Clin. Asst.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. Med. Reg. Also Hon. Surg. Reg.

West End Hospital for Nervous Diseases, Welbeck-street, W.—Hon. Asst. Physician.

West London Hospital, Hammersmith, W.—Hon. Registrar for Throat, Nose, and Ear Dept. Asst. M.O. At rate of £450. Also three Jun. Asst. M.O's. Each at rate of £350.

Westminster Hospital, Broad Sanctuary.—Wander Scholarship, &c. £250.

Woolwich and District War Memorial Hospital, Shooter's Hill, S.E. Res. M.O. £175. Also H.S. At rate of £125.

Wolverhampton, Royal Hospital.—H.S. Also Cas. O. and Res. Anæsthetist. At rate of £150 and £125 respectively.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at West Hartlepool (Durham) and Montrose (Angus).

Births, Marriages, and Deaths.

BIRTHS.

BEDSON.—On Sept. 29th, at Arkwright-road, Sanderstead, the wife of Dr. S. P. Bedson, of a son.

BUCKLEY.—On Sept. 29th, at Lorna Lodge, Barlow Moor-road, Didsbury, the wife of G. H. Buckley, F.R.C.S. Edin., of Blackpool, of a daughter.

COOPER.—On Sept. 29th, at The Georgian House, Chipstead, the wife of A. Basil Cooper, M.B., of a daughter.

MARRIAGES.

BATCHELOR—GLENDINNING.—On Oct. 1st, at St. Paul's Church, Lorrimore-square, G. F. Grant Batchelor, F.R.C.S., to Louise, daughter of the late Mr. and Mrs. John Glendinning, Dumfries.

MCCAY—DOBBIE.—At Edinburgh, on Oct. 7th, 1929, Andrew William McCay, F.R.C.S.E., Chester, to Elsie Margaret, elder daughter of Sir Joseph and Lady Dobbie, 10, Learmonth-terrace, Edinburgh.

MIDDLETON—LAVANCHY-CLARKE.—On Oct. 2nd, at the Scottish Church, Lausanne, Switzerland, E. L. Middleton, M.D., D.P.H., of London, to Bertha Jane, daughter of the late F. H. Lavanchy-Clarke and of Mrs. Lavanchy-Clarke, of Cannes.

DEATHS.

BROWNFIELD.—On Oct. 5th, Harry Munyard Brownfield, O.B.E., V.D., M.R.C.S., L.R.C.P., of Lennox-road North, Southsea.

FRAKES.—On Sept. 29th, suddenly, at Homecroft, Oakley, Hants, Henry Sowter Frakes, M.D., aged 77.

GORDON.—On Oct. 1st, at Exeter, William Gordon, M.A., M.D. Camb., F.R.C.P. Lond., Consulting Physician to the Royal Devon and Exeter Hospital and West of England, Eye Infirmary, in the 67th year of his age.

O'LEARY.—On Oct. 7th, at Yateley Lodge, Yateley, Hants suddenly, following an operation, Arthur Price Evelyn O'Leary, M.R.C.S., L.R.C.P., late of Gleneig, South Australia, aged 62.

PYWELL.—On Sept. 30th, at Fletton-avenue, Peterborough, Ernest Alfred Pywell, M.R.C.S., L.R.C.P., aged 43.

VERRALL.—On Oct. 4th, at East Lodge, Leatherhead, Sir Thomas Jenner Verrall, M.R.C.S., L.R.C.P., LL.D.

WOODMAN.—At the Royal Hospital, Baghdad, on Sept. 10th, from hæmorrhage during enteric fever, Margaret Maxwell, dearly loved wife of G. S. Woodman, F.R.C.S. Ed.

N.B.—A fee of 7s. 6d is charged for the insertion of Notices of Births, Marriages, and Deaths.

LONDON SCHOOL OF DERMATOLOGY.—The winter session began on Oct. 3rd with an opening lecture on the Rise and Progress of Dermatology delivered by Dr. J. H. Stowers at St. John's Hospital for Diseases of the Skin, Leicester-square. Lectures will be given every Tuesday and Thursday throughout the winter months.

GUILD OF ST. LUKE, ST. COSMAS, AND ST. DAMIAN.—The general meeting of the Guild will be held in the Cathedral Hall, Archbishop's House, on Sunday, Oct. 20th, immediately after the High Mass at Westminster Cathedral, which will be celebrated at 10.30 A.M. The annual report of the council of the Guild records a successful year, special mention being made of the care and helpful direction applied to every activity of the Guild by the Master, Mr. Ernest Ware. The hon. secretary of the Guild is Dr. W. J. O'Donovan, of 123, Harley-street, W.1, from whom further information may be obtained.

Notes, Comments, and Abstracts.

OBSERVATIONS IN ICELAND.

HISTORY AND HEALTH.

(FROM A SPECIAL CORRESPONDENT.)

(*Concluded from p. 750.*)

Other Diseases.

Enteric fever has long been endemic in Iceland, with serious outbreaks from time to time. In the period 1911–20 the annual notifications numbered 155, and in the following five-year period 116. In 1927 only 27 cases were notified. The disease has been most frequent in the towns in spite of a good water-supply, tolerably good drainage, and a standard of cleanliness higher, at any rate, than that of the country districts, where the disease is usually limited to single farms. The disease is often of a mild type, some of the cases being paratyphus. It is most frequent in the first and last quarters of the year. Much of the milk is pasteurised in Reykjavik.

Last century *scarlet fever* invaded the country periodically from abroad, each epidemic running through the country for three or four years, and then dying out completely. Early in the present century it became endemic. The last epidemic, which began in 1909, differed in certain respects from previous epidemics; its maximum was reached in 1920, when there were 700 cases, and it had almost died out by the end of 1924. Its extensive distribution and mild character rendered preventive measures difficult as well as superfluous, and isolation was but little enforced except in Reykjavik. In 1927 only five cases were notified.

Diphtheria was waning in the period 1908–19, but in 1920 a new epidemic wave began, reaching its maximum in 1921, and almost dying out in 1925. In the five-year period 1921–25 there were 201 cases notified annually. In 1926 only 71 cases were notified, mostly mild, and in 1927 this figure was further reduced to 26.

Acute anterior poliomyelitis had been rare in Iceland till 1924, when a serious epidemic broke out suddenly, the first case notified being in Reykjavik. There were 463 cases notified, with 89 deaths, in this year, and in 1925 25 new cases were notified. The epidemic raced through the country in about four months, being most severe in the north and west. As in the case of influenza, this epidemic reached its maximum in its second month. The most remarkable feature of this epidemic was the frequency of abortive cases (two-thirds of all cases according to one medical officer). Another medical officer found 11 abortive cases out of a total of 13. The disease was characterised by a slight sore-throat, nausea or vomiting, and sometimes by diarrhœa, slight fever, headache, and pain or stiffness in the back. Most of the patients recovered rapidly. In some cases the reflexes were a trifle impaired during convalescence from an abortive attack. About half of the members of three families, closely observed during the epidemic, showed some sign of the disease. Patients often had a slight attack without any paralysis at first, but on exertion or exposure a relapse occurred, and this was followed by paralysis. Strict confinement to bed from the onset of symptoms and for a week or two after recovery proved necessary. The proportion of patients who became paralysed varied from 15 to 25 per cent. Twenty-one cases of lethargic encephalitis, with seven deaths, were notified in the five-year period 1921–25.

An epidemic of *whooping-cough* was imported from Denmark in 1926. It raged throughout the country during 1927, as many as 6645 cases being notified, with 155 deaths. As many as 96 of these deaths occurred in the first year of life. Many adults, however, also suffered, several of them catching the disease for a second time. On the other hand, many children proved to be immune, and one medical officer observed that approximately one-third of the children who had been exposed to the disease did not develop it. Some medical officers succeeded by preventive measures in keeping their districts partially or totally free. In Akureyri the advent of the epidemic was greeted by the women of the town in a manner as drastic as it was effective. They formed a cordon round the infected district, and so effective was the day and night watch which the pickets kept that the rest of the town was saved. Preventive vaccination was apparently successful in the hands of several medical officers, and 73·4 per cent. of 158 vaccinated children failed to catch the disease, while 21·5 per cent. caught it only in a mild form. The remaining 5·1 per cent. caught it badly.

In 1922 the Icelandic Medical Society launched a campaign against *favus*, and though only 53 cases were discovered it is probable that this was little more than half the total. With the financial aid of the Government, measures for stamping out the disease were adopted, and in 1925 70 cases were discovered and cured.

Malignant disease is slightly on the increase, but cancer of the uterus still remains remarkably rare. The anatomical distribution of malignant growths notified in Reykjavik was as follows: stomach, 54 per cent.; breast, 14·4 per cent.; œsophagus, 5·8 per cent.; colon, 5·8 per cent.; and uterus, 4·3 per cent.

While *diabetes* is very rare, the rarity of *rickets* is in dispute. In one small district a medical officer, with special training in pædiatrics, found that not less than 18 per cent. of the children under the age of two suffered from this disease. So it may be that rickets in a mild form is not as rare as it was formerly supposed to be, but it is far from being as common as in the Faröe Islands, where 42 per cent. of the children have been found to be rachitic.

Cerebral apoplexy is such a frequent cause of death that in the five-year period 1921–25 there were no fewer than 81 deaths a year from this cause (8·5 per 10,000 inhabitants). This is the more surprising as syphilis is a most rare disease in Iceland. Some curious observations suggest that cerebral apoplexy is an hereditary disease.

Conclusions.

Iceland's public health problems may seem at first sight to be those of any other community, to be solved in the same ways that countries with an older public health service have found to be most satisfactory. But in many respects Iceland is unique, and the features which make it so justify it in adapting, rather than adopting blindly, the ideas and measures of the rest of the world. Take such a matter as the isolation of whole districts when epidemics have reached the country from abroad. As we have seen in the case of measles and influenza, barriers can be raised which are effective, for a time at any rate, against most highly infectious diseases whose very ætiology and mode of dissemination are still largely unknown. Even when such preventive measures have proved of only temporary value the results have merited the careful study of epidemiologists elsewhere.

In such an isolated and sparsely populated country an invading germ can be followed almost visually, as it passes from one lone farmstead to another, and it is subject to an attention as disconcerting and personal as that which would be bestowed on a foreign burglar misguided enough to choose Iceland for his field of operations. So much for the geographical character of the country which makes it so helpfully transparent in the eyes of the epidemiologist. It is transparent in another sense. In the crowded, patchwork civilisations of other countries it is a wise man who knows his own father, and a clairvoyant who knows his own grandfathers. But in Iceland everyone can follow his ancestry back a thousand years. Think what this must mean to the student of the problems of heredity! The country is transparent not only geographically and contemporaneously but also historically.

Iceland's comparative isolation for 1000 years has provided a vast mass of material for the study of environment as well as of heredity. The sheep brought over by the early Norwegian settlers differ in certain respects from the sheep in Norway to-day, and it is possible that the descendants of the settlers themselves have developed on lines not altogether identical with those followed on the Scandinavian mainland. Here again there is a very interesting field of study awaiting the anthropologist. Prof. Hannesson's anthropological studies have already blazed a track in this hitherto almost unexplored sphere.

There are many striking differences in the behaviour of certain diseases in Iceland and other countries. A study of these differences might well throw important light on the ætiology of these diseases. It is easy enough to understand why the bacillus of leprosy and the ecchinococcus should have been comparatively common in Iceland up to the end of the last century. But the country's remarkable immunity to certain other diseases, which are relatively common elsewhere, is to a large extent an unsolved problem. Why should acute rheumatism run so mild a course and the cardiac complications thereof be so infrequent? Why should diabetes be almost unknown, and cancer of the uterus so rare? Why should cerebral apoplexy be so common in the almost complete absence of syphilis? Why should this accident apparently run in families? The prospect of answers being found to these and other questions is enhanced by the high standard of the medical profession in Iceland and by its intimate and steadily growing contact with medical science abroad. Were this contact to be promoted by every possible means I am sure that the

accruing benefit would not be one-sided. Iceland should prove a happy hunting ground for research workers, not only for the reasons already given, but also because the Icelandic medical profession receives the medical stranger within its gates with a most charming and spontaneous hospitality.

My most grateful thanks are due to Prof. Gudmundur Thoroddsen, Dr. Olafur O. Larusson, of the Vestmanöy Islands, and Dr. Gunnlaugur Claessen for the help they gave me.

THE EFFECT OF TOXÆMIA ON THE FORMATION OF ENAMEL.

HYPOPLASIA of the dental enamel, characterised by a honeycombed or pitted condition of this tissue, is comparatively common. It has long been recognised that it is often due to some disease or metabolic disturbance during the period of calcification, the subsequent eruption of the affected teeth remaining a permanent record of a past defect in nutrition. Hypoplastic teeth are still sometimes termed rachitic teeth on the supposition that rickets is the chief disease resulting in enamel defect. We know now that while rickets often brings about defective calcification, other diseases also, especially the infective diseases of childhood, may leave their mark on the teeth. Since the dates of calcification are known, the observer can usually predict with tolerable accuracy the times when the disturbance in nutrition affected the portion of the enamel defectively formed.

Dr. L. B. Stott and Mr. W. B. Grandison have investigated the occurrence of dental hypoplasia in children at the Papworth Village Settlement, and their results have been published in an attractively produced monograph.[1] They have been struck by the fact that during dental inspection of the children at this Settlement some showed perfect dentitions, while their general condition and personal hygiene did not differ from that of sufferers from varying degrees of dental caries. This has led them to examine the dental and medical records with a view to ascertaining the significance of this apparent immunity from dental disease. The correlation of the medical and dental records leads them to the view that infective disease during calcification produces hypoplasia while, as a necessary corollary to this, they suggest that acquired resistance to infectious disease is followed by satisfactory calcification.

The interesting suggestion is made that the calcium metabolism in the teeth follows those variations in the calcium metabolism of the body as a whole which occur in active tuberculosis and its arrest. In active tubercle the calcium excretion is high, so the teeth in process of calcification do not receive enough lime salts and are therefore defectively formed. When tuberculosis is arrested the process is characterised by the deposition of calcium in the tuberculous foci. Thus deposition of calcium is a tissue action which may be widespread in and is associated with a low calcium excretion. Hence it might follow that in cases of acquired immunity the teeth undergoing calcification receive plenty of calcium and are, in consequence, highly calcified and resistant to caries.

A further point of some theoretical importance raised by Stott and Grandison is whether this power of depositing calcium is part of a natural resistance or whether it is increased by exposure to infection and is thus due to acquired immunity. They suggest—though they do not bring much evidence to support the suggestion—that efficient calcification is conferred by acquired rather than natural immunity. This seems to mean that the dental enamel is more highly calcified in children who have been exposed to infection, which they have subsequently overcome successfully, than in children who have escaped exposure to infection altogether. The logical and somewhat surprising outcome is that immunity to dental caries, instead of being a function of a normal calcium metabolism leading to normally formed enamel, is rather a function of an abnormal calcium metabolism which causes excessive calcification of the enamel.

THE FUTURE OF MONOGAMY.

A PROPHECY that the years 1930 to 1975 will be a period of sexual reform, during which the institution of monogamy will undergo vicissitudes consequent upon the universal teaching of sex hygiene and the liberation of marriage from external inhibitions, is made in an addition to the To-day and To-morrow Series, which has reached us.[2] The period 2000 to 2030, however, will see the triumph of voluntary monogamy. The somewhat startling reason for this is that "no type of union has yet been discovered in which the maximum of intellectual variety may be so effectually combined with the minimum of emotional disturbance." The book is written in the form of a chapter out of a hypothetical history of moral institutions in the nineteenth, twentieth, and twenty-first centuries. The contemporary literature on which the survey is based is not representative, the chief sources being the series in which this book appears. In the course of the next hundred years, the author thinks, the institution of monogamy will have completed a circle, ending up much as it is now, except that it will be voluntary instead of compulsory, and based on sexual knowledge instead of upon ignorance. The psychological presupposition of this desirable change is that confidence will be gained in humanity's ability to impose voluntary restraints upon its conduct. No attempt whatever is made to analyse the growth of these morally inhibiting processes, and the relevant psychological literature is nowhere referred to.

MEDICAL MISSIONS.

A LITTLE book called "The Touch of Healing," by M. M. Wood,[1] will be welcomed by anyone who wishes to give young people a vivid description of medical missionary work. It is attractively written and illustrated, and is full of arresting anecdotes, drawn from every corner of the world where missionary work is carried on. The photographs come from India, China, Egypt, and Palestine. The training and work of a missionary nurse is sketched out, and the treatment—often in bulk—of all kinds of tropical disease is described. The value of medical missions is undisputed, and the tales in this book show how western science is appreciated by the races to whom it is taken by these devoted men and women.

CASH BEFORE NON-DELIVERY.

M. R. D. (Wembley) has received a call from a man desirous of obtaining orders for print ng, corks, bottles, and the like, who presents as his credential the card of a professional colleague. After receiving payment in advance, nothing more is heard of him. Obviously any instances of frauds of this nature should be promptly reported to the police, in order to teach a lesson to the unscrupulous persons who seek to victimise medical practitioners. The number of these is large, partly because they can so easily obtain an interview, partly, one fears, because practitioners are regarded as readily imposed upon. We would once again warn members of the medical profession to be on their guard against dealing with persons who are entirely unknown to them, with a special caution against making cash payments for goods prior to delivery.

A NURSE'S SALARY DURING ILLNESS.

A. L. M.—The payment of salary during the illness of a nurse is a matter of usage rather than of obligation. The usual practice, both in institutions and on the district, is to pay full salary during sickness for a period dependent upon the length of service the nurse has rendered. Most institutions would retain her national insurance benefit, but some district nursing associations allow a nurse who has been in their service for some time, and who is not well off financially, to retain her benefit for a period. One well-known nursing institute is considering the equity of recommending full salary and allowance for board for six weeks, and after that half the amount. The private nurse must, unfortunately, make her own provision for sickness; but hospitals will often give her free accommodation and care.

DANGEROUS DRUG RECORDS.

H. E. S.—A duly qualified medical practitioner is "authorised" to be in possession of dangerous drugs and to apply them by personal administration. In purchasing the drugs he is subject to the conditions of the Pharmacy Acts relating to the sale of poisons—e.g., signing the poison-book, and so forth. If the practitioner requires the drugs solely for administration to his patients by himself personally, or under his own direct supervision, he is under no obligation to keep the records required by the Regulations in the case of dispensing doctors. If, on the other hand, he dispenses or supplies medicine (which the Home Office interprets as including the case of a doctor leaving a supply of any of the drugs with a nurse for administration to a patient during the doctor's absence), he must keep the prescribed registers.

THE British Social Hygiene Council would be glad to hear from medical men and women willing to give single lectures in London or to undertake short campaigns in the provinces. The fee for a single lecture in London is 1 guinea. Application to the Secretary-General of the Council, Carteret House, Carteret-street, London, S.W. 1.

[1] An Investigation into the Effect of Toxæmia on Enamel Formation. By L. B. Stott, M.B., and W. Baird Grandison, L.D.S. With a Foreword by Sir Humphry Rolleston. From the Dental Unit of the Papworth Village Settlement, 1929.

[2] Halcyon, or the Future of Monogany. By Vera Brittain. London: Kegan Paul, Trench, Trubner and Co. 1929. Pp. 92. 2s. 6d.

[1] Edinburgh House Press, 2, Eaton-gate, S.W. Pp. 62. 1s.

Murphy Oration

ON SOME PRINCIPLES IN ABDOMINAL SURGERY.

Delivered at the Clinical Congress of the American College of Surgeons, at Chicago, on Oct. 14th, 1929,

By D. P. D. WILKIE, O.B.E., M.D., F.R.C.S. Edin., F.R.C.S. Eng.,

HONORARY FELLOW OF THE COLLEGE; SURGEON TO THE EDINBURGH ROYAL INFIRMARY; AND PROFESSOR OF SURGERY IN THE UNIVERSITY OF EDINBURGH.

THE capacity of the peritoneum and the abdominal viscera to tolerate even gross interference has been fully tested during the past 50 years and has formed the basis and the backbone of modern surgery. So great is that tolerance that we as surgeons are apt to presume on it and to lose that sense of reverence for living tissues which should be a fundamental law in operative surgery. By an elaborate ritual we endeavour to ensure that our operations shall be aseptic; but ritual without reverence may be a mockery, and technique associated with trauma will be tolerated less well than much less perfect asepsis but gentle handling. If we had to epitomise our guiding rules in the surgery of the abdomen, I believe we might correctly do so by stating "no traction, no tension." The primary impression conveyed to the mind at the first sight of the interior of a normal abdomen is the remarkable flaccidity of all the hollow viscera; in quietness and in relaxation lies their strength. When disease or operative measures interfere with this relaxation and introduce tension, trouble and pain result. Our guiding principle thus will be to relieve tension when we find it, and so to plan our operative work that neither during nor after the operation shall tension on the abdominal wall, the viscera, or the mesenteries be present.

The signal advances in our standard of preoperative diagnosis has furnished us with the advantage of being able so to plan our incisions in the abdominal wall that we shall have the freest possible access to the seat of disease without recourse to forcible retraction. Whilst the integrity of the abdominal muscles and their nerves will ever command our respect adequate access must always be the first consideration in any major abdominal operation. Too small boots beget corns; too small incisions beget complications. If we visualise the tissues as living, delicate cellular structures we become less and less intrigued with elaborate mechanical appliances, such as powerful self-retaining retractors and mighty crushing clamps, instruments which not only injure directly the patient's tissues, but blunt obliquely the surgeon's sensitivity. Retractors should be used to retain out of the surgeon's way tissues which have been gently pushed aside—too often we have seen them used as if they were weapons.

The Principle of De-tension.

It is in the effective mobilisation of the tissues to be dealt with that our text is best illustrated. Deal only with the mobile organ; if it be immobile, mobilise it. Do it not by force but by strategy based on the anatomical fact that all the abdominal organs were mobile before some became fixed, and therefore all may again be rendered mobile. This sounds dangerously like a platitude and yet this rule is but imperfectly observed, and what should be easy and safe surgery is often rendered difficult for the surgeon and dangerous for the patient.

When William Mayo demonstrated so beautifully how a generous mobilisation of the proximal colon might be effected so as to render resection of a large segment both simple and safe, he illustrated a principle which has a widespread application in the abdomen. Other portions of the gut, such as the duodenum, the splenic flexure, and the descending and iliac portions of the colon, are equally susceptible of mobilisation. How often can a resection of the transverse or distal parts of the colon be rendered easy by a simple division of the phrenicocolic ligament when tissues, which would otherwise be united under tension—that unforgivable sin in abdominal surgery—will fall together in perfect relaxation. In the mobilisation of organs there are two structures to be divided, the peritoneal folds which retain them, and the underlying, and in the case of diseased organs usually thickened, extraperitoneal cellular tissue, or, as we usually designate it, the "fascia propria." It is the division of this fascial layer which renders the mobilisation complete, and this division can best be effected by the knife. Thus we find in the mobilisation of the duodenum a simple division of the peritoneum along its lateral border will free it considerably, but it is only when we divide the fascial bands which hold it, and especially its inferior border, that it can be brought up freely into the abdominal wound. In the case of the colon the systematic division of the extraperitoneal fascial bands by the knife is of equal advantage.

In one operation above all others, however, is this principle seen to greatest advantage—namely, in splenectomy. The greatest impediment to removal of the enlarged spleen is in my experience not inflammatory adhesions, which are rare, but the short outer leaf of the lieno-renal ligament. Without an adequate severance of the ligament the spleen cannot be delivered except at the imminent risk of a tear in the hilum. Not only must the peritoneum on the outer side of the splenic pedicle be divided but also the underlying fascia. Thereafter a spleen which was apparently fixed, so as almost to defy safe removal, comes forward into a field where easy control of the pedicle is readily secured.

Even when we consider such a simple operation as removal of the vermiform appendix we find that the usual impediment to easy removal is not the presence of inflammatory adhesions but the binding down of the middle third of the organ by that congenital fold, first described by Douglas Reid as the genito-mesenteric fold. This fold is practically bloodless, and a few touches of the knife, dividing it, will mobilise the appendix completely and allow it to come up without tension into the abdominal wound.

Mobilisation of Visceral Coats.

When a portion of the gastro-intestinal tract is resected, union, whether by end-to-end suture or by lateral anastomosis after closure of the ends, must be effected. When Murphy introduced his button he did a great service to surgery, not only by evolving an ingenious instrument which has stood surgeons in good stead on many occasions when ordinary suture methods were impracticable, but mainly by proving that if accurate peritoneal apposition was obtained, elaborate layers of suturing were quite unnecessary.

Whilst leak from a suture line may be referable in some cases to sepsis, in others to inadequate blood-supply, it is in my opinion usually due to tension either in the long axis of the gut, due to inadequate mobilisation, to tension in the suture line, or to post-operative tension within the lumen of the gut. If free mobilisation of the ends to be joined has been effected, I believe that in the principle of mobilising the coats of the viscera to be joined so that the layers may be sutured together without any undue tension lies the secret of safe anastomosis. When we remember that the peritoneal and muscular coats of the hollow viscera offer but a slender hold for sutures, that the strength of the wall in every case lies in the submucous coat, we realise that safe approximation of the outer coats can only be accomplished if carried out with these coats completely relaxed. Such relaxation can only be secured, and this particularly in the colon, if these are first divided down to the submucous layer in each end of the bowel entering into the anastomosis. In the colon it is the longitudinal muscular bands which, being shorter than

the rest of the wall, render uniform relaxation difficult. Consequently division of the bands down to the submucous coat should be an essential step in all colon resections.

The employment of a single layer of interrupted Lembert sutures, lightly tied so as to give the minimum of interference with blood-supply, is, I believe, the ideal method of anastomosis, and the safest if the principle of "de-tension" be fully observed. The use of two or more layers of continuous suture drawn tight must inevitably strangulate a certain part of the sutured margins and the infected slough so formed will in a few cases determine a leak.

The last form of tension to be feared is tension from within. The evolution and retention of gas in the colon during the first few days after operation may bring about tension necrosis at a suture line otherwise perfect. To ensure against this nothing is so efficient as an appendicostomy, or, still better, a valvular tube-cæcostomy carried out on the principle of a Senn's gastrostomy. A colon tube passed per anum to beyond the anastomosis is less disturbing but hardly so efficient. Insurance against tension from within by a temporary valvular opening may be practised with advantage when resection of small intestine for acute obstruction is required, and the upper coils are sodden and dilated. Likewise an ileostomy after a resection of the proximal colon, where a subacute obstruction was present, may make the difference between a smooth and a stormy convalescence and may, indeed, be a life-saving measure.

These three elements—mobilisation of the viscus, mobilisation of its coats, and drainage of its lumen—are best exemplified in a case of resection for a tumour of the descending colon.

Free mobilisation of the growth having been secured by dividing the peritoneum and fascia propria along the outer side of the distal colon and by cutting the phrenicocolic ligament, the peritoneal and muscular coats are divided round the whole circumference of the gut at the two points chosen for division. Light clamps of the Shoemaker type are applied at these points and the colon is resected. The clamps are approximated and a posterior row of interrupted fine linen Lembert sutures is inserted and tied. An anterior row of similar sutures is now inserted over the clamps, which are then removed, and the sutures are lightly tied, the two ends of intestine coming together without the least tension, and the intramural blood-supply suffering a minimum of interruption. Through an incision in the right iliac region a valvular tube-cæcostomy is now instituted to obviate any gaseous distension.

Such an operation, based as it is throughout on the principle of "de-tension," is followed by singularly little discomfort and in my experience is one of the most satisfactory in the whole field of surgery.

Where, in the case of resection of either small or large intestine, it is deemed wiser to close the cut ends of the bowel and do a lateral anastomosis, the principle of mobilisation of coats is still more applicable. A circular incision down to the submucous coat will permit of the application of a catgut ligature and subsequent invagination of a diminutive stump with both rapidity and flaccidity. The cuff method of removing the vermiform appendix is an old and familiar practice. The same method applied to the small and large intestine is sound in principle and easy of performance.

Tension Due to Disease.

It is a basal fact in clinical observation that most abdominal pains, if we exclude those due to irritation of the parietal peritoneum, are due either to spasm of, or tension in, the hollow viscera. The establishment of a closed cul-de-sac in one of the hollow viscera, if its content be infected by living micro-organisms, is invariably followed by tension. If the content be composed of organic material capable of putrefaction the ensuing tension will be the more pronounced. Thus we know that the plugging of the neck of an infected gall-bladder by a calculus will be followed by an acute distension of the organ by a muco-purulent content, and that the tension may be so great that gangrene of the wall may ensue, particularly in elderly subjects. In such cases an operation which merely opens and drains the gall-bladder may be life-saving, however inadequate as a curative measure for the underlying disease. In the case of a strangulated loop of intestine, apart from the danger of obstructed blood-supply, we have to reckon that the putrefaction within the closed loop of intestine may in itself lead to such tension that gangrene of the wall may result. The organ, however, in which this factor of tension is found most frequently and with most baneful results is the vermiform appendix.

No man did more to bring home to the medical profession throughout the world the necessity for prompt and immediate operation in acute appendicular disease than did Murphy. How often and in what arresting language did he proclaim the urgency of early diagnosis and treatment in such disease. In one regard, however, Murphy's teaching on this subject was misleading. He insisted on a rise of temperature as one of the early and cardinal signs of acute appendicular disease. Murphy did not distinguish between the two primary and fundamental pathological processes which occur in the appendix—acute infection of its wall, and acute obstruction of its lumen. In the former a rise of temperature is natural and is invariable; in the latter it is absent during the early phase when diagnosis is all-important. No form of intra-abdominal tension demands our observation and respect so insistently as that of the acutely obstructed appendix, for here timely operation can with a minimum of risk remove a threatening danger, whilst delay inevitably means rupture with a peritonitis, oft-times fatal.

The death-rate from acute appendicular disease both in this country and in Britain, has tended to increase rather than to diminish during the past decade. It is my firm conviction that over 90 per cent. of the deaths are in cases not of primary inflammation, but of primary obstruction of the appendix with resultant tension, gangrene, and perforation. If we would but visualise this disease as one of the fatal types of acute intestinal obstruction with the afebrile onset characteristic of such disease, demanding immediate operation before the tense, obstructed organ bursts; if we would teach our students its underlying pathology and demonstrate its characteristic clinical picture, we should not have to deplore a rising death-rate from so-called appendicitis. Van Zwalenburg has, I find, been teaching for more than 25 years the fundamental importance of the obstructive factor in acute appendicular disease. Whilst I cannot agree with him that in all cases obstruction precedes infection, I believe whole-heartedly that blocking of the lumen with tension is the real danger in appendicular disease.

Relief of Tension in Acute Peritonitis.

The much discussed problem as to whether drainage of the peritoneum is advantageous and effective in acute diffuse suppurative peritonitis is, to my mind, answered on this principle, that in so far as it relieves tension and permits of improved vascularity it is helpful. Thus in the case of diffused peritonitis where, on opening the peritoneum, purulent exudate gushes out, tension has obviously been present and a drain will obviate its recurrence. The fact that the drain is very rapidly shut off by intestinal adhesions is undeniable, but by that time it has served its purpose. As Murphy showed very clearly, in cases where drainage is most required adhesions round the tube form but slowly. We do well to remember his words: "Reduction of tension must be initial, and the absence of pressure continuous." The tension may, however, prove not to be due to peritoneal exudate but to intestinal distension. In cases where this factor is pronounced benefit will result from a cæcostomy or an enterostomy according as to whether the large or small intestine is most affected. Such relief of intra-intestinal tension will, among other influences, render a service to the inflamed peritoneum by permitting of more efficient blood-supply. In all cases in which cæcal distension

is a salient feature in the operative findings, a temporary valvular tube-cæcostomy is invaluable, not only as a safety-valve for gas but as an inlet for fluid to combat dehydration.

The Principle of Complete Assessment.

In no other region of the body do we find multiple pathological lesions so frequently as in the abdomen. Such multiple lesions may be associated on a common ætiological basis or may to all appearances be present by coincidence. An operation which cures one lesion and leaves behind another unrecognised may have all the stigmata of failure and is apt to bring discredit to surgery. It behoves us therefore in all abdominal operations, other than those of an emergency character for acute maladies, to be on the outlook for the commonly associated lesions and to exclude other gross pathological changes. I need but refer to the frequently associated lesions in the duodenum, appendix, and gall-bladder. It is my belief that all three are dependent on a streptococcal infection, and when found together, as they not infrequently are, should each be dealt with if a completely satisfactory result is to be assured. Within one year I met with a malignant stricture in the colon in three cases in which operation was undertaken for old-standing gall-bladder disease. In one of these an inadequate exploration failed to reveal the growth, which was only recognised when acute obstruction supervened during the convalescence.

Examples might easily be multiplied of dual lesions present at the time of operation and either recognised or missed according as to whether the assessment of pathology was thorough or incomplete. The two criteria necessary for such complete assessment, if delay and shock are to be avoided, are adequate anæsthesia and generous exposure. It is invaluable for future reference that the negative findings should be recorded. This was a characteristic of Murphy's work, and his constant refrain, "Let the record show," has been perpetuated as one of the most vital and important rules of the Hospital Standardisation Scheme of the College.

The Principle of the Two-stage Operation.

In the surgery of the abdomen, as in that of many other regions—e.g., the brain, the thyroid, and the prostate—we have learned that it is frequently not only desirable but wellnigh conditional for success that we proceed by stages to our ultimate operative goal. Many factors combine to make this surgery by stages a necessity. In abdominal maladies as in few others, the surgeon is often consulted for the first time in the presence of an acute crisis in the disease—e.g., in cases of acute obstruction of the stomach or large intestine, of intense cholæmia in obstructive jaundice, or of walled-off appendicular abscess. The immediate operative indication in any such case is clearly the minimum that will give relief and restore the patient to such condition as will permit of a radical treatment of the causal factor at a later date. The general toxæmia in such cases—the poisoned heart, liver, and kidneys—renders the patient an easy prey to complications if any major procedure is attempted, but further, the local conditions are thoroughly unsuitable both for operative work and for satisfactory repair. The tissues in and around the affected area are œdematous and friable, the bowel content frequently putrefying and highly infective, and the lymph channels draining the area laden with bacteria. A preliminary operation, whether it be a gastro-enterostomy in a stenosing pyloric carcinoma, a simple choledochostomy in biliary obstruction, a cæcostomy in a large bowel obstruction, or a simple drainage of an appendicular abscess, will give the necessary relief and a respite until toxæmia has passed. Nutrition is in a measure restored, the factors of local œdema tension, infected lymph channels and vascular stasis eliminated, and tissue calm restored.

It must be realised that no fixed length of interval between the preliminary and radical operation can be laid down, but that each case presents a problem demanding an individual exercise of surgical judgment. Apart altogether from the benefit accruing to the patient from this restorative interval, we know that the mere opening of the abdomen and the handling of the viscera calls forth a reaction which gives to the peritoneum an increased resistance to infection at the second operation. The latter deals with a peritoneum prepared and warned; there has been, as it were, a test mobilisation of the protective forces.

Whilst working at the subject of peritonitis 20 years ago with the object of testing whether a specific local immunity could be produced, I was impressed by the fact that the injection of any material whatsoever into the peritoneal cavity gave within 40 hours a markedly increased resistance to a lethal dose of micro-organisms. The material injected did not need to be bacterial, it required to be merely foreign material. The same increase in resistance could be secured by a preliminary opening of the abdomen and handling of the viscera. This called forth an immediate emigration of polymorph leucocytes, but later—and more important—a mobilisation from the omentum and mesenteries of large macrophages which could "stand to arms" the moment the infection arrived.

When it happens that a resection of some portion of the large bowel constitutes the second operation, an attempt may with advantage be made further to increase the patient's resistance to the possible infection which awaits him. We know that this infection is usually a mixed one—streptococcal and *B. coli*—and by suitable inoculation we may hope to obtain a certain degree of immunity. Since 1909 it has been my custom in all cases of excision of colon or rectum to give two preliminary injections of streptococcal and *B. coli* vaccine, the first given ten days, the second three days before operation, and to combine this with an injection of nucleic acid given 12 hours before the operation, the latter to call forth a leucocytosis. Experimentally I had found that this preliminary treatment gave in animals a definite increase of resistance to peritoneal infection, and I have reason to believe that it has a real value in human surgery. Recently at the Mayo Clinic intraperitoneal injections of vaccine, with the same object in view, have given encouraging results.

In referring to two-stage operations one must not omit to mention the Mikulicz-Paul operation of eventration of the growth in obstructing tumour of the colon. The advantages of this method of dealing with stenosing carcinoma of the pelvic colon in old and feeble subjects are well known. Whilst this practice is tedious it is eminently safe, especially if an interval of some months be allowed to elapse before an attempt is made to close the artificial anus.

The *on-dwelling clamp operation*, a modification of the Mikulicz-Paul method, has proved of great value in dealing with large growths in the lower half of the pelvic colon, especially in cases where multiple resections of intestine were required. In this class of case, when after resection the lower stump of pelvic colon reaches just up to the pelvic brim, an end-to-end anastomosis is difficult of performance, and the blood-supply of the lower end is precarious. By applying clamps with heavy handles to both ends of the colon, fixing the latter in apposition for one inch by interrupted sutures and fixing the clamped ends in the abdominal wound, removing the upper clamp in two days and leaving the lower one to slough off, one has repeatedly been able to deal successfully with tumours which appeared wellnigh inoperable. In several cases the lower stump has sloughed for an inch below the clamp but without untoward result. After the application of an enterotome an interval of two months is allowed to elapse. This interval permits of retraction of the ends of the colon, of a return of the tissues of the abdominal wall to normal suppleness and elasticity and, most important of all, of an immense betterment in the general condition of the patient.

THE PRINCIPLE OF REPLENISHING PHYSIOLOGICAL LACK.

The cause of death in high intestinal obstruction is a subject which has attracted the intensive interest both of practical surgeons and laboratory workers. Gradually the factors which are operative in producing the condition of collapse, so characteristic of this type of obstruction, have been elucidated, and whilst much remains to be cleared up we have to-day in our possession a number of facts which point the way to ultimate solution of this difficult problem. Whilst doubtless a chemical substance of albumose type is absorbed from the distended bowel above the obstruction, and whilst drainage of this obstructed gut will give some relief, we know that death may yet ensue when free drainage is established. The pronounced dehydration which accompanies such obstruction and the call of the tissues for fluid is now recognised to be of primary importance and replenishment of body fluids the first indication in treatment. The very important fact that a notable and dangerous loss of chlorides occurs in such cases has led to the use of hypertonic saline injections with marked improvement in results. The aspect which I wish to emphasise, however, is that of the secretions which should normally descend into it from the upper portion.

We know that in animal experiments high obstruction with immediate drainage of the bowel is not survived for very much longer than an obstruction without drainage. The fluid, which in the bowel above the obstruction may appear to be toxic and threatening the patient's life, may be life-saving if introduced into the bowel below the obstruction. This fact was first borne in on me by a case of post-operative obstruction following acute appendicitis which is recorded in the *British Journal of Surgery* (1924, xi., 568), but to which I venture again to refer here.

In this case an enterostomy was performed but the coil opened was evidently below the really active obstruction, for no flow from the tube resulted. Later on the same day a second enterostomy was performed, this time on the highest jejunal coil, and a profuse discharge followed. In spite of copious saline infusion the patient continued to go downhill until the device of joining up the two enterostomy tubes was practised, when the abundant secretions from above the obstruction were conducted through the joined tubes to the intestine below. An immediate and remarkable improvement followed this manœuvre, and the patient made a satisfactory recovery and is alive and well to-day.

This call of deprivation of the empty intestine below in cases of high obstruction constitutes, I believe, an important principle in the treatment of such cases. R. St. L. Brockman has emphasised the benefit of enemata of bile in post-operative ileus, and has shown the important rôle which the absorption of bile from the lower reaches of the bowel has in liver function. There are, I believe, other factors besides bile in the profound physiological upset which results when an obstruction occurs between the active secretory upper part of the small intestine and the absorptive reaches below. The emptying of the upper distended coils at operation for acute obstruction of the small intestine, say from a band, may by reducing intra-abdominal tension permit of more vigorous peristalsis thereafter and thus be an advantage. It will not save the patient's life, however, unless subsequent peristalsis results in the propulsion of the content of the higher coils into the empty coils below. The conception of a physiological lack below, combined with a pathological retention above, is one which deserves our attention and will find a field for application in our practice.

CLAPHAM MATERNITY HOSPITAL.—This hospital, in Jeffrey's-road, London, S.W., which is staffed by medical women, is giving free training in midwifery to six daughters of unemployed Welsh miners. Last year, the annual report states, there were 798 maternity in-patients, 109 more than in 1927; 458 out-patients were attended in their own homes.

SYPHILITIC DISEASE OF THE PULMONARY ARTERIES,

WITH ACCOUNT OF A CASE.

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ANY case of arterial disease affecting the lesser circuit merits careful investigation because of the light it may throw on the problem of systemic arterial hypertrophy and degeneration.

In extreme cases of high pressure on the right side due to valvular disease of the heart, chronic bronchitis and emphysema, &c., "the pulmonary artery suffers strain and injury more commonly than is supposed" (Allbutt [1]). The atheroma which may follow is, in Marchand's opinion, a crucial instance of atheroma due to high blood pressure. Posselt [2] (1909) was one of the first to point out that pulmonary atheroma arising as a result of chronic valvular disease of the heart could be held responsible for a definite clinical syndrome. Rogers,[3] in the same year, published the first account in this country of a similar clinical syndrome observed in Bengal, occurring in cases of syphilitic arterial disease affecting the vessels of the lesser circuit and independent of any valvular disease of the heart or chronic pulmonary condition. The next period of interest in diseases of the pulmonary arteries followed the publication (in the Argentine) of observations by Ayerza and by Arrillaga.[4] Following a more or less prolonged period of chronic pulmonary disease the Argentine cases developed cardiac symptoms with intense cyanosis (cardiaco negros) with dyspnœa, hæmoptysis, somnolence, and polycythæmia. These cases showed dilatation and disease of the pulmonary artery with extreme hypertrophy and dilatation of the right heart. Escudero[5] considered these cases as examples of pulmonary arteritis consecutive to syphilitic bronchitis. Veale and Coombs,[6] in 1915, in this country, and Mattirolo[7] and Gamna,[8] in 1921, in Italy, made other observations of importance, describing cases in which there was no evidence of syphilis, and no antecedent pulmonary or cardiac lesion responsible for the change in the pulmonary artery. They established the existence (in a small number of cases) of a primary form of disease of the pulmonary artery.

Since this date there have been scattered references to the condition in the literature of nearly all countries. In France especially there has been increasing interest both in the primary (Durand,[9] 1927) and in the syphilitic form (Laubry and Thomas, Caussade and Tardieu, Darré and Albot, Trémolière, Tardieu, and Nativelle). In Italy Benedetto and de Castro [1] have published a comprehensive review (1928). In America (Bruce and Wilson, Bacon and Apfelbach) cases of the primary lesion have been described, and four cases of the syphilitic form have been published (Cheney, Bruce and Wilson, Wharthin, Zeman).

That the syphilitic form of the disease is much the most common becomes a matter of importance when the symptomatology of the disease is considered. For, although syphilis is recognised in sanatorium practice as one cause of a destructive lesion of the lung simulating chronic ulcerative phthisis, it is not so frequently realised in out-patient practice that the *Spirochæta pallida* may also be responsible for a clinical state closely resembling chronic bronchitis and emphysema and usually diagnosed as such, while actually due to widespread endarteritis and peri-arteritis of the branches of the pulmonary artery.

Report of the Case.

The patient was a male house-porter aged 47. Previous army service for 14 years. Discharged in 1916 with tabes

Possibly gassed, but army pension refused on ground of syphilitic infection. Mother had died of consumption.

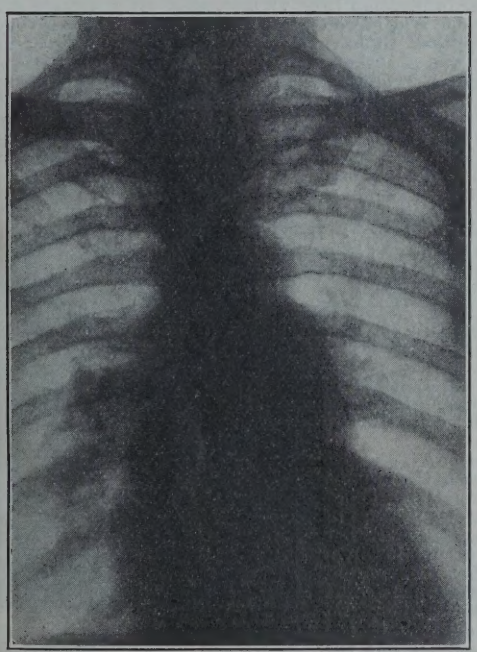
History.—Three years before the final illness he had attacks of giddiness and fainting; he fell down several times while at work. In the following year he had "bronchial asthma," and afterwards was unable to work, owing to breathlessness on exertion. Next year he had only one attack of faintness, but much discomfort from flatulence. He was in bed for six weeks before admission with œdema of legs during last three weeks.

Condition on Admission.—Admitted to Royal Free Hospital on Nov. 10th, 1928; he was in a distressed, dyspnœic condition, much cyanosed; pulse-rate 62, respirations 28. Venesection was performed a few hours later, the distress passed off gradually during first 24 hours, and no such acute attack recurred. Cyanosis of face and hands was present, but not extreme. No finger clubbing. Trunk was thin and there was a moderate degree of œdema of the legs, thighs, lower abdomen, and lumbar region.

He complained of sense of oppression over chest. Morning cough was infrequent and not paroxysmal; the sputum scanty, opaque, and muco-purulent. No tubercle bacilli were found. Respiratory movements were very poor, of diaphragmatic type, rate 20 to 24. The percussion note was not impaired; breath sounds were very weak, but otherwise normal. There were generalised sibilant and sonorous rhonchi. The heart was enlarged, but præcordial dullness could not be defined, owing to emphysema. The pulmonary second sound was accentuated and reduplicated. The pulse was of good volume and regular. The blood pressure was systolic 140, diastolic 110. He complained also of "flatulence." The bowels were regular. The abdomen was distended and rigid, with a small amount of free fluid. Palpation was difficult, but the liver was found to be enlarged to umbilicus, smooth, and not tender. The spleen was not palpable at any time.

A further complaint was of hesitancy on micturition and decrease in amount of urine. In hospital the amount of

FIG. 1.



Skiagram showing bulging of the middle arc of the cardiac shadow.

urine passed daily was 30 to 40 oz., with no albumin or other abnormality.

The pupils were irregular and unequal, and did not react to light. Knee- and ankle-jerks were absent.

Blood.—The Wassermann reaction (blood) was very slightly positive. The cerebro-spinal fluid was not examined. On Dec. 3rd the blood showed red blood cells 6,180,000 per c.mm.; hæmoglobin, 90 per cent.; colour-index, 0·75; white cells, 6900 per c.mm.

Electrocardiogram.—Report by Dr. Jenner Hoskin. Rate 76, regular. Marked right preponderance. T_1 adequate, T_2 and T_3 inverted. P_2 and P_3 large, suggesting auricular hypertrophy. Indicates changes in region of aortic base, at present right ventricle working adequately. (Nov. 20th, 1928.)

Skiagram (Fig. 1).—The following report was made by Dr. Ulysses Williams: "Generalised emphysema of moderate intensity, and distributed fairly uniformly throughout both lungs, more marked at the bases, especially the right. The interstitial fibrous tissue is about normal for a man of this age. Great enlargement of the first part of the pulmonary artery, and owing to the great hypertrophy of the right ventricle, and the rotation to the left of the whole heart, the base of the pulmonary shows more than usual."

FIG. 2.

Left lung. Arteries laid open to show atheromatosis.

Course.—The outstanding symptoms were attacks of great abdominal discomfort, described by the patient as due to flatulence, with tightness of the chest; usually nocturnal, preventing sleep. There was definite improvement for first four weeks. The liver shrank, the circumference of the abdomen fell from 35 in. to 31 in., the œdema disappeared. Later these symptoms, together with almost complete anorexia, reappeared. The liver increased in size, forming a prominence in the epigastrium. Some epigastric pulsation was present. A coarse systolic murmur, probably exocardial in origin, developed over the lower end of the sternum. The heart gradually failed, sleep became more disturbed, and the patient died on Jan. 10th, 1929, two months after admission.

Post-mortem Examination.

Externally considerable œdema of lower limbs, cyanosis of face, cyanosis of ears striking.

Thorax.—Universal pleural adhesions which separated with difficulty. Pericardial cavity contained a slight excess of fluid. Coronary sinus not abnormal in size. Visceral pericardium white and opaque over anterior surface of right ventricle and over whole of right auricle.

Lungs.—Somewhat deformed. Hard nodules palpable in subpleural tissue and in the substance of the lungs. Pleuræ thickened. On section, upper lobes extreme emphysema, fibrous nodules inconspicuous, lower lobes less emphysema, nodular fibrosis widespread. Fibrosis marked towards root of lungs here in form of strands of fibrous tissue rather than nodules. Intrapulmonary branches of pulmonary artery showed dilatation and numerous yellow intimal plaques of atheroma. These could be seen in all vessels down to those of 3 mm. in diameter (Figs. 2 and 3). The bronchi showed no gross change.

Heart.—Externally enlarged. Right ventricle lay entirely in front of left, forming apex of heart.

	Right Heart.	*Left Heart.*
Cavities	Greatly dilated	Normal.
Valves	Tricuspid normal	Mitral normal.
	Pulmonary ,,	Aortic ,,
Myocardium	Firm and dark	Brownish in colour. Some subendocardial fibrosis.
Ventricle wall: thickness at apex.	9 mm. (Normal, 2·5–3 mm.)	12 mm. (Normal, 9–12 mm.).
Circumference at orifice.	Pulmonary 9·35 cm. (Normal 8·5–9 cm.)	Aortic 6·75 cm. (Normal 7·7–8 cm.)

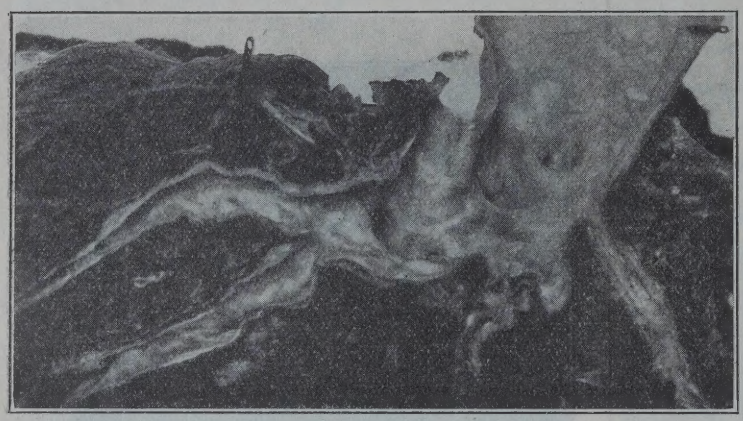
Ratio of circumference of pulmonary artery to that of aortic, 1·38. Normal, 1·1.

Coronary vessels: Normal.

Aorta.—First part of arch and upper half of the thoracic aorta showed considerable change. Intima, irregular pitting and depressions, some stellate. Pearly-white scarring. Also

yellowish raised patches with calcification and, in first part, some ulceration. Changes became less severe and terminated somewhat abruptly about halfway down the thoracic vessel. The appearances suggested syphilitic mesaortitis with superimposed atheroma. The abdominal aorta showed no change,

FIG. 3.



Right lung. Arteries laid open. The walls of the vessels are thickened, their course tortuous; the atheroma is more severe in the smaller vessels.

nor did the vessels of spleen, liver, and kidneys show any abnormality.

Pulmonary Artery.—Main vessel. Lumen dilated, some slight thickening of walls. Intima, no naked-eye changes. Main branches, some intimal change, but no large patches of atheroma till the root of the lung was reached (Figs. 2 and 3).

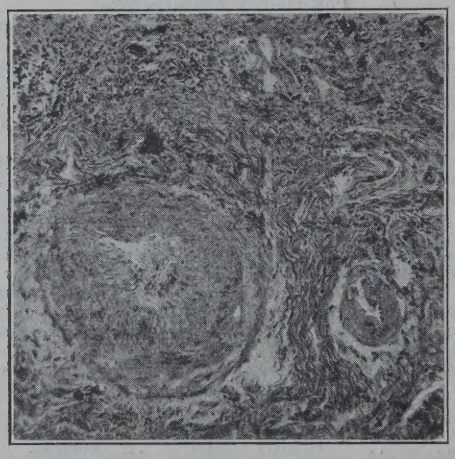
Spinal Cord.—Naked-eye and microscopic changes typical of tabes. Pal-Weigert preparations showed symmetrical degeneration in posterior columns.

The other viscera showed no changes of any importance except those due to congestive heart failure.

Histopathology.

The *aorta* showed vascular invasion of the media with accompanying lymphocytic and plasma cell infiltration

FIG. 5.

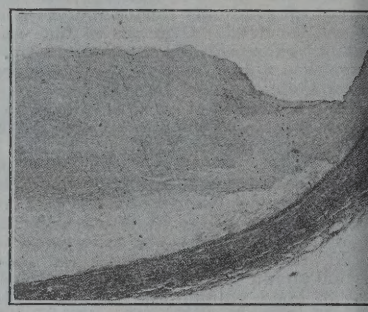


Artery in substance of lung showing extreme obliterative endarteritis, perivascular fibrosis with carbon deposit, and some infiltration by lymphocytes and plasma cells.

typical of syphilis, and a superadded atheroma and some calcification.

Pulmonary Artery.—(1) Vessels over 3 mm. in diameter: The main vessel had slight thickening of its walls, mainly due to increase of thickness of the strong band of elastic tissue visible in longitudinal section. The elastic tissue of the outer part of media was increased in amount, but here showed localised fibrous tissue areas. The intima, even in areas which appeared normal to the naked eye, showed some increase in fibrous tissue. The right and left pulmonaries and their larger branches showed atheroma without calciu deposit. There was no evidence of any inflammatory chan (Figs. 2, 3, 4). (2) Vessels about the diameter of 3 mm.: Som of these showed invasion of their walls by lymphocytes an plasma cells. Atheroma present at the same time. There wa periarterial fibrosis. (3) Vessels small than 3 mm.: The change was severe and too the form of a chronic panarteritis. In som of the vessels (Figs. 5 and 6) the lumen wa almost obliterated owing to proliferation

FIG. 4.



Right pulmonary artery. Longitudina section through a plaque of atheroma.

the intima. In vessels lying near the more cellular areas fibrosis the arteritis was subacute and some plasma cells an lymphocytes were present in the wall.

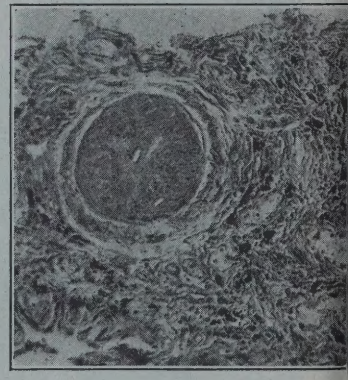
Lung: Fibrous Nodules.—Occasionally truly perivascula the vessel lying in the centre of the nodule. More often th nodules lie near the vessels. In the subpleural region thes nodules were vascular and showed a considerable amount cellular infiltration (Fig. 7), and, since they contained elast tissue deposed more or less regularly throughout, they ma be supposed to have arisen by the obliteration of alveol There was a carbon deposit. Some of the nodules in th substance of the lung contained numerous lymphocytes an plasma cells, with an occasional giant cell.

Alveoli.—The changes in the alveoli in the neighbourhoo of the sclerotic patches were: (*a*) proliferative. The alveol lining cells were cubical and in places filled the entire lume Macrophages, laden with brown pigment, were present in large numbers (Fig. 8); (*b*) obliterative. Plasma cell and lymphocytic infiltration and, later, a development of collagenous connective tissue.

In other parts of the lung high-grade emphysema was present.

Bronchi.—The changes in the bronchi were relatively slight and of the nature of a compression rather than actual involvement in the inflammatory process. In some bronchioles involved in the sclerosis of the lung parenchyma the epithelium showed squamous metaplasia.

FIG. 6.



Subpleural arteriole, showing almos complete obliteration of lumen.

Clinical Summary.

Twelve years' history of tabes dorsalis. Bloo Wassermann slight positive. Two years' sever progressive dyspnœa, accompanied by asthma an cyanosis. A few weeks' œdema of legs. Progressiv right heart failure with regular pulse.

Summary of Post-mortem Examination.

1. Chronic bilateral pleurisy with dense universa adhesion. 2. Chronic vesicular emphysema. 3. Diffus and nodular fibrosis of both lungs, equal in the tw sides. Emphysema of high grade in both upper lobe

and here fibrosis inconspicuous. Fibrosis marked at the roots and in lower lobes and here emphysema less. Nodular fibrosis present throughout both lungs, both subpleural and in their substance. 4. Marked hypertrophy and dilatation of the right heart. 5. Universal atheromatosis of the main right and left pulmonary arteries and their larger branches. Main vessel spared. 6. Widespread periarteritis and obliterating endarteritis of intrapulmonary branches of the pulmonary arteries; severe and accompanied by periarterial inflammatory changes in almost all vessels from 3 mm. diameter to precapillaries. 7. Mesaortitis and atheromatosis of thoracic aorta. 8. Degeneration of the posterior column of the spinal cord. 9. Chronic venous congestion of viscera.

Review of Cases.

Vaquez [11] has suggested the division of cases of sclerosis of the pulmonary arteries into two broad groups, "sclérose complication" and "sclérose

FIG. 7.

Section of subpleural fibrous nodule, showing new formation of vessels, carbon deposit, numerous lymphocytes, and plasma cells.

maladie." In the first group the changes in the pulmonary artery arise as a complication of some antecedent cardiac or pulmonary condition and the clinical signs and symptoms of the underlying morbid changes are usually apparent. In the second group (and it is to this group that the present case belongs) the signs and symptoms are those due to or consecutive to the alterations in the pulmonary vessels themselves. That this second group does not consist of cases having a common ætiological basis is clear from the scrutiny of the published cases in the recent literature.

In reviewing these cases of arterial disease, confined or largely confined to the pulmonary circuit, it is proposed to disregard those cases with no post-mortem and those in which no exact pathological (based on histological evidence) diagnosis is possible. Only cases in Vaquez's second group will be considered. That such a restriction curtails the number of cases reviewed is obvious and some series of cases, notably five cases reported by Eppinger and Wagner,[12] are omitted on the grounds of inadequate histological reports.

It will be seen that among the collected cases many are syphilitic in origin. The diagnosis of syphilis has rested upon (1) the Wassermann reaction; (2) the presence of other stigmata of syphilis, especially aortitis; (3) the histological changes in the pulmonary vessels and in the lung itself. The final decision for or against syphilis rests upon the histological examination of the pulmonary vessels.

Wassermann Positive or Strongly Positive (11 Cases).—All showed syphilitic arteritis of small pulmonary vessels. In addition aortitis in six cases (Nos. 6, 8, 10, 16, 17, 24). Arteritis of main pulmonary in ten cases (Nos. 2, 6, 8, 10, 12, 13, 14, 16, 17, 24). Tabes dorsalis in one case (No. 10). Alveolar lesions in three cases (Nos. 2, 10, 24).

Wassermann Very Slightly Positive (2 Cases).—One showed syphilitic arteritis of small pulmonary vessels and in addition aortitis, tabes dorsalis, alveolar lesions (No. 1). One showed no other evidence of syphilis, and the vascular lesions were non-inflammatory (No. 4).

FIG. 8.

Proliferative changes in alveoli at the margin of a fibrous nodule.

Table of Collected Cases of Acquired Disease of the Pulmonary Artery.

No.	Authors.	Source.	Age.	Sex.	Syphilis.
1	—	Present case.	47	M.	Yes
2	Ajello, L.	Policlin., 1928, xxxv., 461.	29	M.	Yes
3	Bacon, C. M., and Apfelbach, C. W.	Trans. Chicago Path. Soc., 1927, xii., 293.	40	F.	No
4	Benedetto, P., and de Castro, U.	Cuore e Circolaz, 1927, xi., 353.	14	F.	No
5	Bruce, J. D., and Wilson, F. N.	Ann. Clin. Med., 1926, v., 9.	28	F.	No
6	Ditto	Ibid., p. 15.	53	M.	Yes
7	Caussade, G., and Tardieu, A.	Bull. Soc. Méd. Hôp. de Paris, 1928, lii., 871.	40	M.	Yes
8	Cheney, G.	Amer. Jour. Med. Sci., 1927, clxxiv., 34.	47	F.	Yes
9	Clarke, R. C., Coombs, C., and Hadfield, G.	Quart. Jour. Med., 1927, xxi., 51.	22	F.	No
10	Ditto.	Ibid., 60.	39	F.	Yes
11	Darré, H., and Albot, G.	Ann. d'anat. Path. et Méd., 1928, v., 861.	56	M.	Yes
12	Laubry, W., and Thomas, M.	Bull. Soc. Méd. Hôp. de Paris, 1927, li., 9.	38	M.	Yes
13	Ditto	Ditto	36	M.	Yes
14	Ditto	Ditto	45	F.	Yes
15	Ditto	Ditto	60	M.	Yes
16	Ditto	Ditto	59	F.	Yes
17	Ditto	Ditto	58	—	Yes
18	Ditto	Ditto	48	M.	Dbt.
19	Ditto	Ditto	39	M.	,,
20	Lang, G.	Deut. Arch. f. klin. med., 1924, cxliii., 359.	45	F.	No
21	Trémolière, F., Tardieu, A. and Nativelle, R.	Bull. Soc. Méd. Hôp. de Paris, 1928, lii., 860.	42	M.	Yes
22	Wätjen, J.	Deut. med. Woch., 1924, l., 713.	11/12	F.	No
23	Wharthin, A. Scott	Contr. to Med. and Biol. Res., 1919, ii., 1042.	53	M.	Yes
24	Zeman, F. D.	Proc. New York Path. Soc., 1923, xxiii., 58.	53	M.	Yes

Dbt. = doubtful.

N.B.—In referring to these cases in the text the number in the left-hand column will be quoted in brackets—e.g., (No. 11) refers to the case reported by Darré and Albot.

Wassermann Negative (3 Cases).—None showed any inflammatory element in the lesions of the pulmonary artery. Two showed no evidence of syphilis (Nos. 3 and 5). One had a definite history of syphilis (No. 19).

Wassermann, no Record (8 Cases).—Four cases showed arteritis of the small pulmonary vessels (Nos. 7, 11, 21, 23). In addition: aortitis (Nos. 11, 23). Arteritis main pulmonary (Nos. 11, 23). Alveolar lesions (Nos. 7, 11, 21). One case showed arteritis consecutive to typhus (No. 20). Three cases showed non-inflammatory lesions of the pulmonary vessels. No ætiological factor (No. 9). History of syphilis and bronchitis (No. 18). Congenital stenosis of pulmonary veins (No. 22).

The total number of cases under review is 24, and they may be divided into the following groups: (1) 16 diagnosed as having a syphilitic basis; (2) two in syphilitics with non-specific histology of arteries; (3) one following typhus; and (4) five diagnosed as primary. The average age of syphilitics is 47·8, of the primary cases 21, and of those in groups (2) and (4) 27·5. In groups (2) and (4) combined the oldest case (49) had a definite syphilitic history; the histology of the arteries was not diagnostic. None of the others was over 40. In group (1), in which the youngest was 29, only four were under 40.

We may draw two conclusions from these figures—viz., that syphilis is by far the more important ætiological factor in older patients, and that primary sclerosis of unknown ætiology is found in younger patients.

In the analysis of the post-mortem findings and the clinical signs and symptoms which follow reference is only made to the syphilitic cases.

Lesions in the Pulmonary Vessels and Lungs.

1. *Main Pulmonary Artery and Extrapulmonary Branches.*—Thomas[13] points out that, although the classical conception of the distribution of syphilitic vascular disease is that syphilis attacks the aorta, but respects the pulmonary circulation, in his series of cases there are numerous instances of both vessels being attacked. (Out of 10 cases showing arteritis of the pulmonary artery six had aortic lesions.) He shows that in some cases the aortic lesions are considerable, while the pulmonary artery is only mildly damaged, but that in other cases the alterations in the two vessels are of equal importance. Some of the cases described by Thomas are not included in the present series since the aortic lesion provides the clinical phenomena. Taking all the collected cases it is interesting to analyse the frequency with which syphilitic lesions of the main pulmonary vessels and syphilis of the aorta are associated with syphilitic arteritis of the smaller branches of the pulmonary artery. In 16 cases there was syphilitic arteritis of small pulmonary vessels:—

In 12 with main pulmonary and right and left pulmonary artery syphilitic: aorta syphilitic in 7, aorta normal in 5.

In two with main pulmonary and right and left pulmonary arteries, showing athero-sclerosis: aorta syphilitic in one; normal in one.

In two with main pulmonary and right and left pulmonary arteries, showing dilatation only; aorta normal in both.

These figures show that in syphilitics with an initial vascular lesion of the smaller pulmonary arteries the main pulmonary artery and its branches are more often (12 cases) affected than is the aorta (8 cases). The lesions in the large pulmonary vessels when purely syphilitic are similar to the classical picture of syphilitic mesaortitis due to syphilis. There is, in nearly all cases, superimposed athero-sclerosis. The vessel may be very greatly dilated. The ratio of the circumference of the pulmonary artery to that of the aorta is increased to 1·3 (No. 10), 1·38 (No. 1), 1·4 (No. 2), normal 1·1. In one case (No. 14) there was a saccular aneurysm of the pulmonary artery.

Thomas in his thesis states that the syphilitic lesions scattered and not intense in the trunk and great branches are more numerous and widespread in the branches at the hilum and in the medium and small branches; the majority of the collected cases show the same distribution. Trémolière, Tardieu, and Nativelle in their case, which also showed mitral stenosis, found the most severe lesions in the smaller vessels (about 5 mm. diam.) and in the trunk and first branches no longer specific panarteritis, but athero-sclerosis with atheroma (No. 21). The present case (No. 1) shows a similar distribution—whereas syphilitic arteritis was generalised throughout the intrapulmonary branches of the artery and most severe in the arterioles, the vessels at the hilum showed only slight inflammation with considerable athero-sclerosis and the trunk and first branches athero-sclerosis alone. Only one case in the series showed as healthy main pulmonary and healthy large branches (No. 7), the infundibulum of the artery alone showing dilatation.

2. *Intrapulmonary Vessels.*—All the cases show lesions in the intrapulmonary branches of the pulmonary artery. These lesions are more or less widespread (Nos. 11, 14), but tend to differ in severity and activity in the vessels of different calibre. In one case the lesions are stated to have been most severe in the vessels of the second and third degree (No. 23). In others the arterioles show the most extreme alterations (Nos. 1 and 10). The typical lesion is a panarteritis usually of a subacute form. All the vascular coats are altered and are infiltrated by plasma cells and lymphocytes with newly formed capillaries passing into the media and even to the intima (Thomas). The intima is thickened and the lumen may be partly or completely obliterated. Chronic panarteritis with periarterial fibrosis, with in some instances hyperplasia and in some cases destruction of the elastic tissue of the media (Thomas) may be present. Thrombosis occurs with considerable frequency. This may have been an incident during the course of the disease (Nos. 2, 7, 10, 21) or thrombosis with infarction of the lung may supervene without premonitory symptoms (No. 13). In some cases thrombosis has been followed by organisation with recanalisation, and a collateral circulation may have been established with a localised production of dilated blood-vessels (No. 2).

There is considerable uniformity in the vascular lesions throughout the series. Darré and Albot (No. 11) describe lesions which are identical with those in the present case. Trémolière, Tardieu and Nativelle and Thomas give valuable accounts of the vascular changes.

3. *Lung.*—Nearly all cases show the changes due to chronic congestion. Many cases show an extreme degree of emphysema (Nos. 1, 6, 8, 23, 24), in some there is a terminal œdema (Nos. 7, 13, 15, 21, 24) and infarcts of varying age were present in six cases (Nos. 11, 12, 13, 15, 16, 21). Lesions which can be truly referred to the results of syphilis are present in seven cases (Nos. 1, 2, 7, 10, 11, 21, 24). The change take two forms: fibrosis spreading in broad bands throughout the lung and having origin in the dense fibrous tissue around the vessels (No. 10), and nodular areas of fibrosis.

The origin of the nodular areas of fibrosis may be interstitial or intra-alveolar. The interstitial nodules arise by organisation of perivascular or subpleural foci of lymphocytic infiltration. Such foci were described by Letulle and Dalsace[14] under the title of nodular cortico pleuritis, as one of the forms of latent syphilis of the lung reported by those authors. In later stages these foci become fibrous and often very vascular (Nos. 1, 7, 11). The intra-alveolar origin of fibrous tissue is described by French authors as "alveolite végétante." Alveoli or groups of alveoli become airless and filled with desquamated cells, many of which are loaded with brown pigment. Some mononuclear cells are also present. There is proliferation of the alveolar epithelium which has become cubical. Later the cells disappear and collagenous fibres take their place. Pigment may remain among the fibres. In sections stained with Weigert's elastic stain the remains of the alveolar walls can be made out in the resultant fibrous

dule (Nos. 1, 7, 11). In some cases true miliary mmatous foci are described (Nos. 1, 2, 21).

4. *Bronchi.*—The changes in the bronchi are slight nearly all cases. Some catarrhal inflammation is ported (Nos. 8, 10) and some epithelial metaplasia os. 1, 11). In one case only is there any evidence of e bronchial lesion being syphilitic and antecedent or of the same age as the arterial lesion (No. 15). reporting this case Thomas describes it as being case of syphilitic arteritis arising in the course of onchial syphilis, and therefore comparable to the ses described as "Ayerza's disease" by Escudero.

Changes in the Heart and Other Organs.

Two of the cases in this series had some degree of itral stenosis (Nos. 7 and 21). None of the others owed any valvular disease. The characteristic ange in the heart is great hypertrophy and dilatation the right side of the heart. The right ventricle rms the whole anterior surface and the apex of the art (Nos. 1, 2, 10, 12). The wall is extremely ickened, 2·5 times or even 3 times normal (Nos. 10, 1). In one case the enlargement of the heart, which as very great, was due almost entirely to dilatation o. 23). In this case also the right auricle formed out one-third of the heart bulk, but in the majority cases the right auricle was dilated and hypertrophied proportion to the changes in the right ventricle. he left ventricle shows hypertrophy and dilatation in me cases (Nos. 6, 7, 13, 14, 15, 17, 23).

This series of cases shows no lesions of any import-nce in the other organs beyond those due to chronic enous congestion. No case of splenic enlargement is ported.

Clinical Review.

In reviewing the cases an attempt has been made determine which symptoms give the disease, philitic arteritis of the pulmonary artery, a true tity and distinguish it from other affections of the lmonary artery.

The diagnosis from alterations in the pulmonary tery secondary to some underlying cause in the lungs heart rests with the presence of the symptoms and gns of the underlying lesion. The syphilitic arteritis llowing on a prolonged history of chronic bronchitis yerza, Arrillaga, Escudero) in the syphilitic subject ay produce a terminal clinical picture not unlike the ses under discussion. The history and signs of vere bronchial damage must be taken into considera-on. In distinguishing between syphilitic arteritis d non-syphilitic primary sclerosis there is no sure ethod; only the age and history of the patient will of assistance.

Symptoms.

Two symptoms take on a significance of the first portance; they are of insidious development and low a progressive course during the clinical history. ese are dyspnœa and cyanosis.

Dyspnœa makes its earliest appearance as dyspnœa exertion. This may be the only symptom for as ng a period as four years (Nos. 6, 7, 11). Nocturnal roxysmal attacks are frequent (Nos. 6, 7, 14, 21,). Later dyspnœa becomes constant with attacks orthopnœa.

Cyanosis is one of the most characteristic signs but may be early or late in its appearance and varies atly in its intensity. Eight cases showed intense anosis. Where radiological reports are given it is nd that intense cyanosis is associated with increase the hilar shadows and enlargement of the middle t arc of the cardiac shadow, confirming the views pressed by Thomas that cyanosis in these cases does t appear without general dilatation of the main lmonary vessels. In some cases (No. 23) cyanosis y be constant, while during attacks of dyspnœa d thoracic discomfort the cyanosis deepens to lack."

Other Symptoms.—A sense of oppression in the rax (Nos. 1, 8, 23) is sometimes present, often coming on after exertion or during attacks of dyspnœa and increased cyanosis (No. 23). None of these cases has complained of severe pain, such as is described as "angor cæruleus," "angine pulmonaire hyper-cyanotique," &c. (Vaquez). *Hæmoptysis* may be due to purely vascular change or due to thrombosis with infarction. Hæmoptysis was slight in four cases and profuse in two cases. One case (No. 13) had slight hæmoptysis for three years and then had a sudden attack of hæmoptysis with cyanosis two months before death. This later hæmoptysis was due to thrombus formation in the middle branch of the right pulmonary artery with infarction of nearly the whole of the middle lobe of the lung. On the other hand quite extensive thrombosis or infarction may take place without hæmoptysis (No. 11). *Palpitations* occur during the course but are not constant. *Attacks of vertigo* may be the earliest symptom (No. 1, 2) or may occur later (No. 6). *Somnolence* has been described as a constant and characteristic symptom by various writers but in the present series only two (Nos. 21, 23) cases are reported as showing this symptom. *Clubbing of the fingers* is not described in these cases. It appears to be present in nearly all cases where alterations in the pulmonary artery are secondary to lung or bronchial conditions.

Physical Signs.

The clinical examination of these cases allows the exclusion of more usual causes of cyanosis and dyspnœa by ruling out chronic pulmonary conditions, congenital lesions, or acquired valvular disease of the heart, &c. The total absence of physical signs is one of the most characteristic peculiarities of primary arteritis or sclerosis of the pulmonary artery.

Cardiac.—The pulse is regular. The heart is enlarged both to right and left. The only alteration in the cardiac sounds which appears to be constant is that of reduplication or accentuation of the pulmonary second sound—occasionally a diastolic murmur of pulmonary insufficiency symptomatic of dilatation of the pulmonary artery (Thomas, No. 16). Later, signs of right heart failure or of total cardiac failure appear. Thomas describes a gallop rhythm in many of his cases (Nos. 12, 14, 15, 16, 17, 18) and in some refers it to the right ventricle (Nos. 14, 15).

Pulmonary.—There are no constant physical signs in the lungs. Signs of emphysema or various râles may be present.

Œdema is present in all cases and varies in intensity, some cases showing œdema of the hands, feet, and legs, some showing generalised anasarca (No. 24) or ascites (Nos. 2, 6, 12) in addition. The spleen is not enlarged in the majority of cases (exception No. 23).

Special Examinations.

The Blood.—There are eight records of the number of red blood corpuscles. The counts vary from 5,200,000 to 8,760,000, the average being 6,605,000. There are only six records of the leucocyte count giving an average of 11,160. The counts in individual cases may vary from time to time. In two cases two results are given (No. 15), 5,500,000–7,000,000 and (No. 23) 7,200,000–8,760,000.

The *electrocardiogram* gives valuable information about the state of the right ventricle. There are reports in three cases which correspond fairly closely. Right ventricular preponderance. Rate increased. No arrhythmia in two cases, occasional extrasystoles in one. Inversion of T_2 and T_3 and P_2 large, suggesting auricular hypertrophy.

Radiography.—There are radiographic reports in ten cases. Examination by X rays gives the most characteristic findings and the radiographic appearances are fully discussed by Thomas in his thesis. He points out that the characteristic findings are:

(1) Increase in length and projection of the left middle arc (Nos. 1, 12, 18, 21). (2) Increase in size of the arterial shadows at the hilum with pulsation greater in amplitude and more visible than normally (No. 21). (3) The branches of the pulmonary arteries show more clearly than normal

and can be followed in their course towards the periphery of lung. Some cases show pulsation (No. 14).

These three points he refers to the increased arterial tension.

(4) Modifications of the cardiac shadow due to the enlarged right ventricle with enlargement of the infundibulum of the pulmonary artery and rotation of the heart, causing bulging of the middle arc. (5) When pulmonary insufficiency is present " La danse hilaire " can be seen. The hilar shadows are seen to move with expansile impulses with each beat of the heart. The aneurysm of the pulmonary artery in No. 12 was diagnosed from the radiological examination.

Skiagrams also show the presence of fibrosis whether spreading from the hilum or in the substance of the lung (Nos. 11, 21), and may show the presence of infarcts.

Conclusions.

A well-defined group of cases exists in which arterial disease is confined or largely confined to the pulmonary circuit. These cases differ from other cases with arterial lesions in the lesser circuit in that there is no antecedent pulmonary, cardiac, or bronchial lesion. Twenty-three fully reported cases have been collected from the literature, and a further case is now described.

It is found that syphilis is by far the most important ætiological factor in older patients. Primary non-inflammatory sclerosis of unknown ætiology is found in younger patients. In the syphilitic cases the lesions in the intrapulmonary arteries take the form of an obliterative arteritis, usually most severe in the smaller branches and arterioles. This condition leads to a raised blood pressure in the lesser circuit. Dilatation and hypertrophy of the main pulmonary artery follows with atheroma of the right and left pulmonary arteries and larger branches, whether the latter show inflammatory lesions or not. The right side of the heart becomes greatly dilated and hypertrophied. Clinically the cases are characterised by dyspnœa, cyanosis, and hæmoptysis, and in the later stages by progressive congestive heart failure with a regular pulse.

Syphilitic arteritis of the pulmonary arteries, while admittedly rare, is worthy of notice, since by early diagnosis antisyphilitic treatment might afford some hope of amelioration of the symptoms.

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A BIRMINGHAM POOR-LAW HOSPITAL.—The Birmingham Board of Guardians have adopted a scheme for the enlargement of their Dudley Road Hospital at a cost of £80,000. The pressure upon the institution has become very severe. The in-patients have increased from 8867 in 1924 to 13,232 in the year ended with March last; in the same period out-patients grew from 3701 to 17,063. So great is the pressure that of late non-resident nurses have had to be engaged, an expensive process justified only by the lack of accommodation. The existing nurses' home holds 103 nurses, 49 live in adjoining buildings, and over 90 are housed in hospital wards. The proposed extension of the home will accommodate 142 nurses, and is so planned as to permit conveniently of further enlargement. It is intended in the near future to provide a new mortuary, and post-mortem and pathological departments.

SUBCUTANEOUS NODULES IN THE SCALP

IN FATAL CASES OF GLANDULAR ENLARGEMENT WIT MONONUCLEOSIS.

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THE following two cases present such a remarkab likeness to one another, and such unusual signs ar symptoms, that they seemed to us worthy of recor the more so because in one of the cases a post-morte examination was carried out. How to give a tit to this contribution which will enable others recognise the condition we are attempting to descri is in itself a difficulty, and equally difficult for th same reason is a search of the literature for simil cases. Their interest is increased by the great dif culty in diagnosis, and the liability of falling into th mistake of calling such a case one of rheumatis It is an interesting fact that rheumatic symptoms a not uncommon among the early warnings of suc fatal diseases in childhood as the leukæmias and th grave anæmias. Radiographic appearances in the two cases seem to us to throw some light on the symptoms, though this by no means explains th swelling of the wrists in the second case, which we suggestive in their appearance of Still's disease.

Account of Two Cases.

CASE 1.—A boy, aged 3 years and 3 months, was admitte to the Hospital for Sick Children on Oct. 5th, 1928. He w the only child of parents who are first cousins. He w breast fed as a baby, and remained perfectly healthy up the beginning of 1928, when he twice had bronchitis. April, 1928, enlarged glands first appeared in the rig side of his neck, and two weeks later he developed son fever, with pain and swelling of his joints. These swellin were fleeting in character, and affected the ankles, knee wrists, and elbows. During this illness the glands becan enlarged in both sides of the neck and in both groins, a these glands remained large up to the time of admissio In June, 1928, the pains in the legs recurred, and the b was admitted to the Metropolitan Hospital, where remained for two months, when he was removed by h parents.

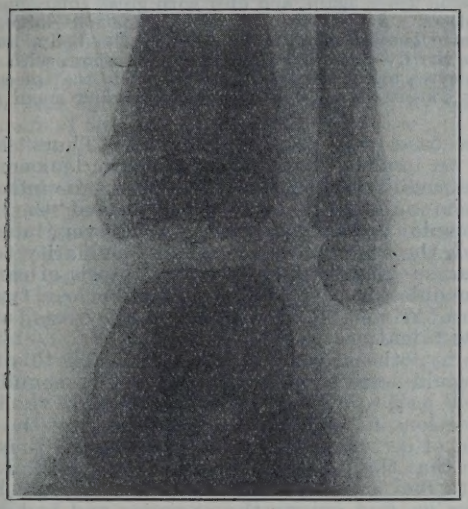
The house physician at the Metropolitan Hospital kind furnished some particulars of the investigations carried o there. A gland was excised, and the pathological repo said: " No evidence of new growth: there is some hype plasia, but nothing to suggest lymphadenoma." A blo count showed a secondary anæmia with a slight leucocytos (19,000 per c.mm.), and the differential leucocyte cou was normal. The Wassermann reaction was negative.

The boy's condition became worse after discharge from t Metropolitan Hospital, and he was sent to the Hospital f Sick Children.

On admission he was a pale boy, with a somewhat put face, of average development for his age. There were mass of enlarged, discrete glands on each side of the neck a on the posterior aspect beneath the occiput. The axillar inguinal, and epitrochlear glands were also considerab enlarged, and over the mass of glands on the right side of t neck—the largest collection—were many dilated venul Scattered over the skull were several small hard masse about the size of a pea, not fixed to the bone, and apparent in the scalp. There were similar swellings, rather mo fixed, deep to each eyebrow. The heart was not enlarge there were no murmurs to be heard, but the first sou was very short and accentuated. The pulse was rapi 140 per minute, soft, and of poor volume. The temperatu was normal. The abdomen was slightly distended, the liv being enlarged about two fingers-breadth below the cost margin, while the spleen was not palpable. There were signs of disease in the respiratory or central nervous syste and the urine was normal.

Progress.—The pulse remained very rapid, and the swellin on the head became more enlarged. The temperature w now raised, and had a swinging character. Pain occurr in the regions of the left elbow-joint and the right kne

Radiographic examination showed evidence of rarefaction in the regions where pain was experienced (see figure), and the appearances suggested infiltration of new growth. The parotid glands became enlarged, and on Oct. 20th the spleen became palpable for the first time. The boy's condition became worse, the temperature being more raised, often as



Radiogram showing rarefied areas at end of long bones.

high as 102° to 103° F., the pulse was more rapid, 160 to 180 per minute, and the glands became more enlarged, especially in the parotid region. There were no hæmorrhages to be found anywhere over the body nor in the retinæ. He was removed by his parents on Nov. 3rd, and died at home two weeks later with great abdominal distension.

The blood counts in this condition were very puzzling, and are summarised in Table I.

TABLE I.

Date in 1928 ..	Oct. 5th.	Oct. 19th.	Oct. 28th.
	Per c.mm.	Per c.mm.	Per c.mm.
Red corpuscles	3,700,000	3,237,500	2,637,000
Hæmoglobin	40 %	25 %	25 %
	Per c.mm.	Per c.mm.	Per c.mm.
White corpuscles	10,000	32,000	62,000
Polymorphs	29 % (2,900)	8 % (2,560)	6 % (3,720)
Small lymphocytes ..	52 % (5,200)	32 % (10,240)	3 % (1,860)
Large lymphocytes ..	12 % (1,200)	60 % (19,200)	83 % (42,460)
Mononuclears	2 % (200)	—	
Eosinophils	1 % (100)	—	—
Transitionals	4 % (400)	—	3 % (1,860)

In the last cell count there was also about 5 per cent. of myelocytes, but the predominating cell was a large mononuclear with non-granular cytoplasm, which did not show any granules with the "oxidase" stain. This was called a lymphocyte in earlier films, but was possibly a "pre-myelocyte."

CASE 2.—A boy, aged 2 years and 1 month, was admitted to the Hospital for Sick Children on March 27th, 1929. He was the only child of healthy parents, and was quite well until January, 1929, when he is stated to have had "ulcerated tonsils," and he was ill for three weeks. About a fortnight after this he was suddenly seized with pains in his joints. These pains were somewhat fleeting in character, and affected his hips, knees, wrists, ankles, and especially the finger-joints on the left hand. He improved for a week, and then relapsed, and a fortnight after the beginning of his arthritic pains the glands in his neck became swollen. Feverishness was stated to have been present throughout the illness.

On admission he was a well-nourished, pale child, very fretful, and apparently in pain. The glands on both sides of the neck were obviously enlarged, discrete, and rather tender, while the glands in the axilla and groin were easily palpable. There was some indefinite swelling of the wrists, the left being slightly tender. Radiographic examination of the long bones showed in positions corresponding to the situations of his pain somewhat irregular rarefied areas in the shafts close to the epiphyses. The tonsils were enlarged and red, but without an exudate. The heart was not enlarged, but there was a systolic murmur at the apex with abrupt heart sounds. Over the head were several hard swellings about the size of a pea, not attached to bone, and movable with the scalp. The liver was enlarged to about two fingers-breadth below the costal margin, the spleen was not palpable, and there were no enlarged glands palpable in the abdomen. The respiratory and nervous system were normal, and the urine contained no abnormality. The temperature was raised on admission (100° F.), and the pulse-rate was 140 per minute, the pulse being soft and easily compressible.

Progress.—At first there was some improvement, and the glands became a little smaller. The nodules on the head varied from time to time, occasionally almost disappearing. A right-sided ear discharge developed, and early in May, 1929, the glands in the neck all became larger, while glands over both parotids also enlarged. Some œdema, redness, and tenderness over the right side of the lower jaw developed in association with a septic tooth socket, and shortly after this on May 18th the spleen became palpable. From this time onwards the progress was downhill. The temperature became higher (102°–103° F.) and swinging, a brassy cough developed, and a purpuric rash appeared over the right side of the trunk and legs. The swellings on the head became at first rather larger, but towards the end almost completely disappeared. The heart developed a "bruit de galop," and death occurred on June 14th. The Wassermann reaction was negative.

The blood counts throughout the illness also were somewhat puzzling, and were complicated by the various septic processes which occurred (otitis media, septic tooth). The counts are summarised in Table II.

TABLE II.

Date in 1929 ..	March 28th.	April 16th.	May 3rd.	June 13th.
	Per c.mm.	Per c.mm.	Per c.mm.	Per c.mm.
Red corpuscles ..	4,950,000	2,900,000	3,375,000	806,000
Hæmoglobin ..	60 %	50 %	50 %	Less than 20 %
	Per c.mm.	Per c.mm.	Per c.mm.	Per c.mm.
White corpuscles ..	24,000	11,400	19,000	1,750
Polymorphs ..	50 % (12,000)	28 % (3,192)	54 % (10,260)	—
Small lymphocytes	6 % (1,440)	—	8 % (1,520)	—
Large lymphocytes	28 % (6,580)	46 % (5,244)	24 % (4,560)	—
Mononuclears ..	14 % (3,290)	24 % (2,736)	13 % (2,470)	—
Transitionals ..	2 % (480)	2 % (228)	1 % (190)	—

The large lymphocytes and mononuclears were very similar to the abnormal cells present in Case 1, being non-granular single nucleated cells, giving a negative "oxidase" reaction.

Post-mortem examination was performed 12 hours after death by Dr. C. Kellett.

The scalp showed only a few indefinite areas of thickening; no definite nodules could be found. The skull, brain, and meninges were normal. The thymus was small, the thyroid normal, but all the glands in the neck were distinctly enlarged, as also the lymphoid tissue in the nasopharynx. The glands on section were white and hard, and showed no caseation. The lungs and pleuræ were normal, and there was no enlargement of the mediastinal glands. The heart was slightly enlarged with pale and easily friable muscle. In the abdominal cavity there were numerous enlarged lymphatic glands, especially in the pre-aortic region in the neighbourhood of the pancreas. The liver was pale, somewhat enlarged and firm, and the spleen was moderately enlarged, weighing 60 g., and showed some hyperplasia of the lymphoid areas. There were no naked-eye deposits of any abnormal material in either liver or spleen. The kidneys were pale, and suprarenals somewhat shrunken. The intestines showed hyperplasia of the lymphoid elements, both in small and large bowel. The left femur showed very pale bone-marrow throughout, but there were no definite infiltrations of bone found in the portions examined.

Histological examination showed some evidence of bronchopneumonia in the lungs, and cloudy swelling with fatty

degeneration in the kidneys. The liver showed fatty degeneration of the liver cells, and the portal tracts were infiltrated in an irregular manner with small round mononuclear cells with poorly stained cytoplasm. The spleen and lymphatic glands showed definite changes which were similar in both series of sections. These consisted of (*a*) definite increase in the fibrous tissue elements; (*b*) hyperplasia of all the cells with a slight predominance of the endothelial cells; (*c*) slight increase in eosinophils; and (*d*) no evidence of any tubercle formation or of abnormal malignant cells. Some of the endothelial cells were larger than normal, but no definite multinucleated cells were found. On the whole the sections seemed to conform to the "lymphadenoma" type of glandular hyperplasia.

Discussion.

The early age is a remarkable feature of these cases, and this, combined with the pains in the joints and limbs at an age too old for scurvy and, in general terms, too young for rheumatism, is at once perplexing and warns the clinician of difficulties ahead. The deposits in the scalp in these two cases appeared to us very remarkable. They were especially numerous on the vault of the cranium and not in the occipital region; but except for this they were suggestive of unusually large and numerous rheumatic nodules, such as may occur in occasional examples of virulent rheumatism. Further, they varied in size, diminishing in the second case so obviously that everyone was struck by such an occurrence when the disease itself was clearly advancing. There were no nodules on the elbows and knees or elsewhere, except in the first case those lying below either eyebrow. The rheumatic pains in the joints and muscles were striking and in the second case puffy swellings around the wrist-joints were observed in the hospital. In the first case the arthritic symptoms had disappeared before he came under our care, but the history was sufficiently definite to have made the diagnosis of acute rheumatism a probable one to the earlier observers. The blood picture in the first case gradually developed along the lines of an acute leukæmia, and when this child was taken from the hospital the pigeon-hole into which the case was placed was that of leukæmia. In the second case the nearest pigeon-hole appeared to be lymphadenoma.

These two cases appear to us to illustrate a view which we believe to be a valuable one in the study of the blood diseases in young children, which is to throw over boldly any classification based upon classical leukæmia and lymphadenoma, and start anew on the assumption that we are dealing with infective processes to which there is a reaction by the tissues, and by the blood, in particular, of an unusual kind. We recognise that in suppurative infections, such, for example, as empyema, the usual reaction is an increase in the polymorphonuclear leucocytes, that in glandular fever there is a mononucleosis, that in mumps there is a lymphocytosis, and in typhoid fever a leucopenia. It seems a reasonable hypothesis to suppose that the leukæmic and aplastic conditions met with in childhood may represent some disordered response to infection or some curious type of infection which calls forth these unusual results. In both these cases, and in many of the cases of leukæmia in childhood, we find suspicious evidence of previous infection such, for example, as tonsillitis or bronchitis.

It has already been stated that in attempting to search the literature for other similar cases we have been hampered by the problem of under what heading to look. There was a case, however, under the care of Dr. Hugh Thursfield some years ago, and shown at the Section for the Study of Disease in Children of the Royal Society of Medicine in 1925,[1] which was in the memory of one of us as being very similar to the two cases under discussion.

Dr. Thursfield's case was a boy of 4½ years, who had enjoyed good health until five months before admission to hospital, when the glands in the neck and axillæ enlarged. He had carious nodular swellings in the scalp which, according to the mother, "came and went," and certainly varied in size while he was under observation. His blood count showed a secondary anæmia, while the white cells numbered 7800 per c.mm., of which 96·5 per cent. were lymphocytic. He had severe epistaxis on several occasions, developed a purpuric rash, and had retinal hæmorrhages. His right ear began to discharge freely while he was in hospital, and a septic condition of his lower jaw developed. His spleen was only just palpable, and after making an apparent recovery he became worse again, and died with great enlargement of the spleen. At a post-mortem examination large, pale lymphatic glands were found all over the body, and on section the liver showed a patchy infiltration, with small lymphocytes along the portal tracts, while the spleen was greatly congested and infiltrated with similar small round cells.

This case was presented by Dr. Thursfield as either an unusual type of lymphocytic leukæmia or an abnormal lymphocytic response to some infection, and one subsequent speaker suggested the term "leukæmic lymphadenosis." Whatever label be applied, the case shows remarkable similarity to our two cases: glandular enlargement, sepsis of ear and jaw, nodules in the scalp, a mononuclear type of response in the blood without leucocytosis, and a fatal termination.

The hypothesis we put forward, which this third case would seem to support, may not be sound, but it would lead to a study of the reactions of the blood to infections in childhood unhampered by the conception of certain primary blood diseases. It is well known that the present pigeon-holes set aside do not serve to find a place for many of the unusual blood pictures we find among the anæmias and leukæmias of childhood, and these unusual blood pictures may eventually be found to mark stages in a faulty reaction to infective processes, the final picture being in some cases the classical anæmias and leukæmias which we all recognise.

Summary.

In conclusion, we should like to summarise the salient features of the cases we have described, so that other observers may be able to recognise the condition—subacute onset, glandular enlargement, arthritic pains and swellings, nodules in the scalp, fever, mononuclear response in the blood, slight enlargement of the spleen, serious course and severe nature of the malady, with terminal hæmorrhages in various situations.

[1] Proc. Roy. Soc. Med., 1925, xix., 26 (Section Proceedings, p. 4).

TUMOUR IMMUNITY.

TREATMENT BY AUTO-VACCINATION OF IMPLANTED MOUSE CARCINOMA (M. 63.)

BY THOMAS LUMSDEN, M.D. ABERD.

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SOME 18 months ago it was shown in THE LANCET [1] that sarcomata (Jensen's) growing in the flank of rats could be caused to regress by injecting 1 per cent. formalin into them, and that the rats so treated were thereafter immune to reinoculation with this tumour in all parts of their bodies. This procedure was named vaccine treatment, because it was held that at some stage of the destruction of tumour cells by formaldehyde, a soluble antigen was produced and absorbed into the circulation in sufficient quantity to arouse immunity.

The justness of this view was evident to those who observed systematically the animals while under treatment, but was less apparent to cancer research workers who had no actual experience of the treatment. This was not unnatural, since Jensen's rat sarcoma is a tumour which induces some concomitant immunity, and hence even rats from which it has been simply excised exhibit thereafter a considerable though lesser degree of resistance to reinoculation.

In order to demonstrate unexceptionably the mechanism involved, it was necessary to show that

[1] THE LANCET, 1927, ii., 1283.

omparable results could be obtained in the case of tumour which, it was universally admitted, did not voke effective concomitant immunity and which ould therefore always be successfully reinoculated nto an animal from which it had been excised. Such a tumour is the mouse mammary carcinoma, M. 63 of the Imperial Cancer Research Laboratory. Russell [2] stated that this is "a strain giving progressively growing tumours in practically every animal inoculated," and that "its power of inducing esistance is nil." With these dicta all other investigators have agreed. The results obtained by vaccine reatment of this tumour are detailed below.

Experiments.

A single fragment of very active tumour material (M. 63), weighing from 0·005 to 0·01 g., is inoculated nto the right flank of each of a series of mice. The mice are examined after a week, and those (generally about 90 per cent.) in which a progressively growing umour has resulted are separated for treatment. This is begun usually on the eighth to tenth day after noculation, when the tumour has attained a diameter of 4 to 5 mm—i.e., a size comparable (allowing for he difference in body-weight) to a tumour the size

—	T_1 I_5	T_1 I_4	T_1 I_3	T_1 I_2	T_1 I_1	T_2 I_3	T_2 I_2	T_2 I_1	T_2 $I?$	T_3 I_2	T_3 I_1	T_3 $I?$	T_2 F	T_3 F
1	W												W	
2	W												B	
3		Br											F	
4		W											G	
5		Br											GW	
6		F											GW	
7		W												W
8		W												W
9		Br												BW
0			Br											B
1			W											BW
2			W											F
3			BW											B
4				Br										BW
5					Br									W
6						Br								Br
7							B							F
8							W							BW
9							W							Br
0							Br							W
1							W							GW
2								W						W
3								W						BW
4									W					FW
5									GW					W
6									BY					
7										Br				
8										B				
9											F			
0											BW			

T_1, T_2, T_3 represent the number of tumours which had to be treated before immunity (I) or failure (F) resulted. I_5, I_4, I_3, &c. = Immunity evidenced by 5, 4, or 3 consecutive negative tests. The letters W = white, B = black, Br = brown, G = grey, F = fawn, BW = black and white, &c., indicate the colour of each mouse.

of an orange in man. By means of a very fine hypodermic needle a solution of formalin (1 per cent. in *normal saline*, not distilled water) is injected slowly into the centre of the tumour so as to distend it as much as possible without bursting its capsule, some of the solution is then injected around and deep to the tumour. About 0·1 to 0·25 c.cm. of the formalin solution is inoculated altogether. This procedure is repeated daily until the tumour is evidently disappearing. The decision as to whether treatment should be continued or stopped and the appropriate dose for injection is always difficult and only experience makes the best results attainable. The thing to aim at is gradual regression of the tumour, without so much damage to the surrounding normal tissues and the skin over it as to cause ulceration. In an animal so small and fragile as a mouse this entails delicate and sensitive handling.

As soon as the tumour has regressed and any inflammatory reaction which was present has disappeared, a second—i.e., first test—inoculation of active tumour material is made into the left flank of each treated mouse, controls being inoculated with similar material and dose in *every* instance. In a proportion (about half) of the treated and tested mice no tumour appears, but even so the mice are not judged to be certainly immune until they have been tested three or four times with inocula of increasing amount (0·02 to 0·05 gr.).

If the first test inoculation on the left side gives rise to a tumour it frequently indicates that the tumour originally treated had not, in reality, been eradicated and recurrence on the right side is apt to take place if the test inoculation on the left side is made too early. When this happens both the left flank tumour and the recurrence on the right side are treated with formalin, and only after both have entirely disappeared is the mouse retested.

In a few mice it has been necessary to treat more than two tumours in this way. The detailed results are as shown in the table.

It will be seen that the experiment concerned 55 tumour-bearing mice. Of these 30 were ultimately cured, while in 25 mice treatment failed, and these 25 mice, though the course of the disease was much delayed, ultimately died from cancer. Of the 30 cured mice, 26 were tested for immunity; of these, 15 were found to be immune after treatment of one tumour only, 8 after treatment of two tumours, and 3 after treatment of three tumours. The remaining four cured mice died of intercurrent diseases (such as diarrhœa and pneumonia) before the result of the test inoculation was evident. Of the 26 cured and immune mice:

2	were	tested	negatively	on	5	consecutive occasions.
7	,,	,,	,,	4	,,	,,
5	,,	,,	,,	3	,,	,,
8	,,	,,	,,	2	,,	,,
4	,,	,,	,,	once.		

The average number of consecutive negative tests in the 26 immune mice was thus 2·8 per mouse.

While these results are inferior to those obtainable when treating rat tumours [3] they are considered sufficiently striking to demonstrate that the conclusions arrived at previously were sound. Although others have, in rare instances, observed spontaneous regression in the case of tumours of the strain here dealt with (M.63), it is clear from the sentence quoted above that this was not Russell's experience, and in my laboratory spontaneous regression has never been noticed in a series of over 7000 implantations. To have caused regression followed by immunity in 50 per cent. of the treated animals is therefore a significant result, especially since mice are so small and fragile as to make successful treatment of this sort difficult for purely mechanical reasons.

Remarks.

It will be appreciated that in this experiment all the mice were proved to be *not naturally immune*, since they were chosen for treatment only after a progressively growing tumour had resulted from implantation of a fragment of M.63. Any confusion from this source is thus entirely excluded. The virulence of the test material was in *every* instance demonstrated by inoculating it into an equal number of normal mice. In these controls the implantations grew progressively in 80 per cent. to 100 per cent. of the different batches of normal animals. The degree of immunity evoked and the percentage of cures obtained depends on the skill and judgment exhibited by the experimenter, yet it is believed that even an investigator with but little experience of the method will obtain results good enough to convince himself as to the principles concerned, which is, after all, the most important point.

[2] Fifth Sci. Rep. Imp. Canc. Res. Fund, 1912, p. 5.

[3] THE LANCET, 1927, ii., 1283.

It may be well to recapitulate here some of the details of technique which should be meticulously followed:

1. The original inoculations should consist of a single fragment of very active material about 0·01 g. in weight, and the injecting needle or cannula should be inserted as far as possible from the inguinal glands, since if these get infected cure is more difficult to effect.

2. After sucking the fragment into the injecting cannula the point of the latter should be washed in saline.

3. When treating the tumours inject through a very fine hypodermic needle about 0·1 to 0·25 c.cm. of 1 per cent. formalin in saline very slowly into the growth, trying to distend it without bursting its capsule. Some of the formalin should, before withdrawing the needle, be injected around the tumour.

4. Begin treatment when the tumour has a diameter of 0·4 to 0·6 cm. and continue the injections daily, as long as any definite circumscribed growth can be felt, through the œdematous swelling caused by the injections.

5. Do not test for immunity until it seems certain that the treated tumour has completely disappeared, otherwise the test inoculation is apt to grow and the original tumour to recur. If this happens, repeat the treatment.

6. Keep a careful record of the dates on which each individual mouse has received a formalin injection, and the dates of each test and retest inoculation.

7. Do not inject formalin into the inguinal gland unless it is progressively enlarging or the skin over it looks purplish. It often gets enlarged as the result of simple inflammation and regains its normal size when treatment of the tumour is finished.

A high degree of immunity as indicated by failure of the first and all subsequent test inoculations is most likely to occur when the original tumour was of considerable size—i.e., in the neighbourhood of a quarter to a half gramme in weight—and where its regression has been achieved without ulceration of the skin or much destruction of normal tissue. Since tumours of a variety (M.63) which does not tend to regress naturally are caused to disappear completely, and the animals in which this has been effected are thereafter immune to recurrence or reinoculation, there need be no hesitation in using the word "cure" in relation to the results of auto-vaccination of this sort in the case of the implanted cancers of rats and mice. With the slower growing Twort's carcinoma results equivalent to the above are much more easily attained.[4]

Taken along with the results previously reported the above findings indicate that by means of auto-vaccination we are either (1) aiding by our intervention some natural protective mechanism which every animal possesses, or (2) evoking some new curative process. The former appears to the writer the more probable of these alternatives. A general review of the pertinent observations suggests that all animals exhibit in varying degree resistance against the growth of any variety of tumour cells inoculated into them. If this be so, any sharp classification of tumours into two distinct groups—viz., those which give rise to concomitant immunity and those which do not—is misleading.

The facts that implantations of heterologous tumours never grow progressively, that homologous tumour implantations sometimes fail to grow and sometimes spontaneously regress, and that in rats tretted by auto-vaccinatinn autoplasties of spontaneous tumours are not invariably successful, all lend support to this view. The rare but well-authenticated cases of spontaneous recovery which have been observed in man give justification for the hope that even in the case of human cancer the body resists the invasion of its tissues by malignant cells, by means of a mechanism comparable to that by which it resists the growth of implanted tumours—a mechanism which it may, in like manner, be possible to assist to the extent of rendering it effective in a large proportion of cases.

In the long series of experiments previously reported [5] the aim has been to discover the mechanism of the spontaneous control or cure of cancer, and the conclusions arrived at are that natural recovery is, in the case of implanted tumours, characterised by the production of anti-malignant-cell bodies in the serum of the affected animal, along with the elaboration by extravasated leucocytes of a lytic substance capable of destroying (even homologous) cancer cells.

The facts observed suggest that the agency which induces this process of regression is the absorption from the tumour area of some product of dying tumour cells which provides the necessary antigenic factor. Evidence in favour of this view has been published in previous communications.[6]

In the above schema the facts herein reported are of interest as indicating that the methods which evoke increase of immunity against a tumour which gives rise to a high degree of comcomitant immunity—e.g., J.R.S.—are applicable to a tumour of which it has been agreed that, in the words of Russell, "it power of inducing resistence is nil"—viz., the mouse carcinoma, M.63 of Imperial Cancer Research.

One further step has to be taken in lower animals before human tumours can be hopefully treated along these lines. It is necessary to discover whether vaccine or serum treatment can be effectively applied to spontaneous mouse and rat tumours. The author has now bred some 700 mice from a strain kindly sent him by Dr. Burton T. Simpson, of Buffalo U.S.A. Seventy per cent. of the females of this strain are, in America, found to develop spontaneous mammary cancer when they reach the age of 5–20 months. If a similar proportion of these mice develop tumours in this country (none has done so yet), the great initial difficulty of obtaining an adequate amount of experimental material should be obviated. It seems certain that it will be especially difficult to evoke immunity against spontaneous and therefore autologous tumours, but it may nevertheless be found possible to overcome this final difficulty. In any case the attempt must and will be made as soon as sufficient material is available.

Summary and Conclusions.

1. In 30 out of 55 mice in which mammary cancer (M.63) was growing progressively, the tumours were caused to regress by auto-vaccine treatment (injection of 1 per cent. formalin saline into the growth) and the mice so cured showed a high degree of immunity against subsequent implantations of the tumour.

2. The facts reported indicate that all animals resist the invasion of their tissues by implanted (and possibly by spontaneous) tumour cells, through a mechanism which can be strengthened by auto-vaccination. In the case of certain animals and tumours this natural mechanism is without further stimulation occasionally sufficient to prevent progressive tumour growth—e.g., Jensen's sarcoma in rats. In other instances the unaided natural resistance is inadequate—e.g., M.63 in mice. It is misleading to think of implantable tumours as falling into two discrete groups—viz., one group in which concomitant immunity is evoked and another in which no such immunity appears. No hard-and-fast line can be drawn between the one group and the other. Any differences seen, appear to be not in kind but only in degree.

The author gratefully thanks Sir Charles Martin, F.R.S., for helpful criticism and for facilities at the Lister Institute, the British Empire Cancer Campaign for its grant, and Miss A. C. Kohn Speyer, M.A., for assistance in keeping records of the experiments and in other ways.

[4] Cancer Conference, London, 1928, p. 216.
[5] THE LANCET, 1927, i., 116.
[6] (*a*) THE LANCET, 1927, ii., 1283; (*b*) Cancer Conference, London, 1928, p. 216.

THE SOUTHEND HOSPITALS.—New mental ward of Rochford Poor-law Hospital have recently been opened. The institution will be taken over by the Southend Town Council when the guardians are disestablished, and cases will then be received from the area outside Southend. The Rochford Board of Guardians have refused to renew their subscription of £125 to the Southend Victoria Hospital unless they are represented on the governing body.

Clinical and Laboratory Notes.

A CASE OF SEBACEOUS CYST UNDERGOING MALIGNANT CHANGES.

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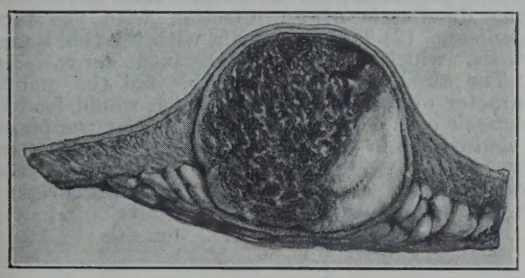
THE danger of neglecting to act upon medical advice with regard to the treatment of a simple tumour has been well exemplified in a case which recently came under our observation.

Colonel A., aged 75, consulted one of us about four years ago on account of a swelling on the back just below the angle of the right scapula. He had had no pain, and his attention had been drawn to its presence by the attendant at a Turkish bath. On examination the tumour proved to be a simple sebaceous cyst. The patient was told that its removal was an easy matter and entailed very little discomfort, but nothing more was seen of him until December, 1928, when he once more asked for an interview. His story was that he had enjoyed good health since his last visit, and that he was only seeking advice because the Turkish bath attendant had informed him that something seemed to be going wrong with the lump on his back. Investigation revealed the fact that a hæmorrhage had occurred into the cyst which was the size of a walnut, and that there was considerable infiltration of the subcutaneous tissues. There was no evidence of inflammation.

It was represented to the patient that excision of the tumour was now urgently required, and permission was obtained to operate under local anæsthesia. A 1 per cent. solution of novocaine was injected beneath the skin and into the cellular tissue around the cyst, and by an elliptical

FIG. 1.



A drawing of the tumour as it appears on vertical section.

incision the whole mass down to the muscles of the back was removed. The convalescence calls for no comment.

The interest of this case lies in the pathological changes which apparently occurred during the course of the last four years.

Sebaceous cysts commonly become inflamed and suppurate. They may even fungate, producing a foul offensive mass which has been mistaken clinically for a cancer. Rarely an encapsuled tumour somewhat resembling a sebaceous cyst has been observed growing from the scalp. This is filled by a folded ingrowth of squamous epithelium, and has been given the name of "benign epithelioma." The case which we record is clinically a sebaceous cyst, but on histological examination proves to be a basal cell carcinoma. Most of the red mass (which appears dark in Fig. 1) consists of fairly recent blood clot which is beginning to organise. The white mass in the bottom right hand segment consists of structureless homogeneous material.

The capsule is formed of rather cellular fibrous tissue, and externally forms a definite boundary everywhere except at the most prominent part of the tumour where it blends with the skin epithelium. Internally the capsule is less defined and at places shows island of fairly normal squamous epithelium forming horny pearls. Lying beneath the capsule and tending to blend with it is a mass of cells of basal cell type arranged in anastomosing strands to produce a reticular appearance, some of the spaces of which are occupied by a loose connective tissue with very thin-walled blood-vessels, some by only a thin-walled blood sinus, and others by homogeneous acellular material.

At certain places the basal cells can be seen to be originating from one of the islands of squamous epithelium mentioned above; this is well shown in Fig. 2. At other parts these

FIG. 2.

Microscopic section showing outgrowth of basal cells (A) from an island of squamous epithelium (B).

cells are arranged in a manner recalling the structure of a sweat gland. This tissue lines the whole of the internal surface of the capsule, except opposite the white mass of structureless material. It varies in thickness, and in one place forms a band which can be recognised microscopically as a mass somewhat lighter than the blood clot.

The presence of the epithelial islands in the position described bears out the clinical finding that the tumour was originally a sebaceous cyst; the origin and type of cells in the new growth are those of a basal cell carcinoma (rodent ulcer). The somewhat unusual arrangement is what might be expected from the fact that the tumour has grown into a non-resisting structureless mass and has had to form its own stroma and blood-vessels. To this fact also the extensive hæmorrhage may be attributed.

AN OUTBREAK OF SCARLET FEVER AMONGST ADULTS.

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DURING the first six months of 1929 322 cases of scarlet fever were admitted to the Borough Hospital, Croydon, and 74 (23 per cent.) of these were in-patients between the ages of 15 and 50 years. In the corresponding period of 1928 there were 259 scarlet fever cases, of which only 34 (13 per cent.) were in this age-group. Most of the scarlet fever admissions in 1929 were in March and May, whereas in 1928 the number was greatest in February, after which there was a steady fall. The greatest incidence of the disease was in the age-group 15 to 20 years, as shown in the table.

Ages.	M.	F.	Ages.	M.	F.
15–20 years	12	13	40–45 years	1	1
20–25 ,,	6	13	45–50 ,,	—	2
25–30 ,,	7	4			
30–35 ,,	3	4		—	—
35–40 ,,	2	6	Total	31	43

M. = males. F. = females.

Many of the 74 cases were of the septic type with intense rashes, marked injection of fauces, and dirty

tonsils, glandular enlargement, and high fever. The complications were as follows: adenitis, 6; albuminuria, 2; rheumatism, 2; rhinorrhœa, 5; otorrhœa, 1; secondary sore-throat, 5. There were two relapses on the 17th and 24th days.

Of the cases of septic type 25 were treated with scarlet fever streptococcal serum, of which they received 10·0 c.cm. intramuscularly on admission—i.e., between second and fourth day of disease. Serum rashes with slight rise of temperature and joint pains, either scarlatiniform, urticarial or papular, were noted in 12 cases, the rash appearing within 7–14 days of injection and usually lasting 24–36 hours, but there were no cases of serum sickness. The giving of serum did not seem to bring down the temperature more rapidly, but no relapses occurred in the serum-treated cases. The average stay in hospital for the serum cases was 30 days, whereas it was 31 days for the others.

The interesting feature of this outbreak is that 23 per cent. of the cases occurred after the third quinquennium of life, whereas the disease is usually commonest between the ages of 2 and 6, two-thirds of the cases occurring, as a rule, in the first and second quinquenniums. According to Kerr, cases are few in number after the age of 15 years. The giving of scarlet fever streptococcal serum did not seem to affect the incidence of complications or the length of stay in hospital to any great extent. All but one of the serum cases which developed complications were females.

I wish to thank Dr. Oscar Holden, medical officer for Croydon, for permission to publish this note.

A CASE OF *BRUCELLA ABORTUS* INFECTION IN MAN.

By H. E. Bloxsome, M.R.C.S. Eng.,
SURGEON TO THE FAIRFORD COTTAGE HOSPITAL.

With a Pathological Report by

E. N. Davey, M.D. N.U.I.,
PATHOLOGIST TO GLOUCESTER ROYAL INFIRMARY.

A DISPENSING chemist, aged 50, was attacked at the end of last March by what I called influenza.

The onset was sudden, with chilliness and sweating, and some headache and fleeting pains. The temperature was moderate, and I thought he would be well in a week; but at the end of that time his temperature was still 101° F. at night, and his pulse-rate kept steadily high (120). He sweated a great deal, but had no aches or pains, and on examination I could find no physical signs. There was no previous medical history of note, except occasional febrile attacks in winter.

The patient was thin, and had a slight cough, so I asked Dr. W. A. Dickson, the Gloucestershire tuberculosis consultant, to see him, but he could not find any physical signs in the chest, abdomen, or central nervous system. The urine was free from albumin and sugar. The bowels acted normally. The features of the illness were the drenching sweats and the undulant character of the fever, and the rapid and weak pulse. He had no joint pains, and no enlargement of spleen or liver. After about a fortnight of this pyrexia I sent a specimen of his blood to Dr. Davey, who reported no signs of typhoid or the paratyphoids. He found, however, that the serum agglutinated the *Brucella abortus*—a strain of which he was working with at the time. The patient lived a very sedentary life, and seldom went out except on his motor-cycle, so that he had not come into contact with any animals; he drank very little milk, and had only once been out of his market town in a year, for half a day. No one else in the town had shown any signs of a mysterious disease. His brother had rather a prolonged influenza, which we afterwards thought might have been this infection, but his blood did not clump the bacilli.

The drug treatment used was urotropine grs. x t.d.s. Quinine in 5-grain doses had no effect on the temperature. After a course of urotropine the patient himself suggested salol, and from the moment it was employed the fever abated—post hoc probably, but worth remembering in a future case. The febrile period was about three months, and the temperature was normal by June 25th. On August 21st, however, the patient had to be readmitted to the Fairford Cottage Hospital with a recrudescence of a milder type. On this occasion his pyrexia lasted only ten days. He has now (Oct. 12th) resumed work.

There is always a great deal of contagious abortion in this neighbourhood, the veterinary surgeons tell me; but there is no clue to show how this patient picked up the organism.

Pathological Report by Dr. Davey.

Owing to the prevalence of contagious abortion amongst cattle in this area, we have been making it a practice to examine all sera submitted for agglutination reaction for typhoid fever, against the *Br. abortus* Bang, Oxford standard cultures.

The serum of this patient was submitted on May 7th. It gave a negative reaction with *B. typhosus* and *B. paratyphosus* A and B, but was found to agglutinate *Br. abortus* in dilutions of 1 : 25 to 1 : 250. When the agglutination was carried to its highest titre it agglutinated in as high a dilution as 1 in 5000 after four and a half hours' incubation. It also agglutinated *Br. melitensis* in dilutions of 1 : 25 to 1 : 500.

We saw the case in consultation on May 13th, and beyond the tachycardia and high temperature there were no objective signs present. The blood count was: red cells, 3,000,000 per c.mm.; white cells, 5600 per c.mm. Differential white cell count: polymorphonuclears, 42 per cent.; small lymphocytes, 45 per cent.; hyalines, 8 per cent.; and myelocytes, 5 per cent. Blood cultures in Douglas's broth and trypsin broth and on serum and blood-agar were sterile after six days' incubation; both aerobically and under partial CO_2 pressure. Urine cultures were sterile.

On July 12th, after the temperature had subsided, a further agglutination reaction was performed, the titre then being *Br. abortus* 1 : 25 to 1 : 2500, and *Br. melitensis* 1 : 25 to 1 : 500. The patient was again seen on August 19th, when he was convalescent. His only symptom was tachycardia, and his blood picture was: red cells, 4,500,000 per c.mm.; white cells, 4600 per c.mm.; hæmoglobin, 60 per cent.; colour-index, 0·66. Differential count: polymorphonuclears, 47 per cent.; small lymphocytes, 30 per cent.; hyalines, 18 per cent.; myelocytes, 5 per cent.

The interesting points in connexion with this case are: (1) The very high agglutination titre, the fact that it was higher for *Br. abortus* than *Br. melitensis* being diagnostic of an infection with the former organism. (2) The leucopenia with relative lymphocytosis, which persisted well into convalescence. (3) The absence of any signs beyond the undulant character of the temperature which would lead to a diagnosis of the condition other than by the presence of agglutinins in the patient's serum. It is becoming increasingly important in this country to examine sera in cases of pyrexia of unknown origin for *Br. abortus* agglutinins.

DONATIONS AND BEQUESTS.—Mr. Henry Dakin, of Millers Dale, Buxton, left one-third of his estate amounting to over £4000 upon trust for his brother for life with remainder to the Derbyshire Royal Infirmary, part of this bequest to be used to endow a Henry Dakin bed.—Miss Ellen Constance McKee, of Bentinck Mansions, Bentinck-street, Marylebone, left £500 each to the Elizabeth Garrett Anderson Hospital, Euston-road, and the South London Hospital for Women, Clapham Common; £250 to the London (Royal Free Hospital) School of Medicine for Women; and £100 each to the National Education Association, Caxton House, and the Association for Moral and Social Hygiene, Great Smith-street, Westminster.—Miss Evelyn Winifred Riley, of Harrington-gardens, South Kensington, left estate of the value of £178,189, and made many bequests to charities, including £1000 each to the Royal Surgical Aid Society, the United Kingdom Beneficent Association, and the National Society for the Prevention of Cruelty to Children; £500 each to the West London Hospital, the Hospital for Women, Soho-square, the Middlesex Hospital, and the National Institute for the Blind, Great Portland-street; and £100 to the Society for the Prevention of Cruelty to Animals. She left £14,500 in trust to pay certain annuities and subject to such annuities between the Surgical Aid Society, the United Kingdom Beneficent Association, the Society for the Prevention of Cruelty to Children, the West London Hospital, the Hospital for Women, the Middlesex Hospital, and the National Institute for the Blind.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PATHOLOGY.

ON Oct. 15th Prof. A. E. BOYCOTT, F.R.S., delivered a presidential address to this Section on

THE BLOOD AS A TISSUE.

Besides being a carrier of food, excreta, and hormones, the blood, he said, is a tissue. As such it has a life of its own, malformations (e.g., acholuric jaundice) and tumours (e.g., leukæmia, splenomegalic polycythæmia), and can be studied for itself. There being no name for the total quantity of red corpuscles with the marrow cells from which they come, he suggested the word "erythron" as convenient. Hypertrophy of the erythron is caused by relative lack of oxygen whether this is due to high altitudes (anoxic type of Barcroft) or slowness of circulation (stagnant type), though in many cases of heart disease the associated increase in viscosity would be harmful and the reaction does not occur. Similar active growth (regeneration) in anæmia is also due to anoxæmia (anæmic type). Atrophy of the erythron is caused by relative excess of oxygen as in compressed air, persons returning from high altitudes to sea-level, and after transfusion. Hypertrophy and atrophy are both conditioned by the needs of the animal; similar conditioned responses (atrophy and regeneration) in the liver and kidney in mammals, in the claws of a prawn, and in the tentacles of a worm were considered. In all cases the result has the appearance of a purposive action, and it was urged that a frank acceptance of a teleological outlook made pathology more intelligible and formed a sound guide in investigation. The normal quantity of hæmoglobin and its concentration in the blood is a compromise between the desirability of having plenty of oxygen and the disadvantage of having blood which is too viscous, the best balance depending on the rate of the circulation.

SECTION OF NEUROLOGY.

AT a meeting of this Section held on Oct. 10th, the retiring President, Mr. DONALD ARMOUR, introduced Dr. GORDON HOLMES, who delivered his presidential address on

DISSOCIATION OF THE OCULAR MOVEMENTS.

It was often assumed, he said, that the almost ceaseless movements of the eyes were purely voluntary; indeed, clinical pathology and physiology had shown that the majority occurred without the intervention of the cells in the higher regions of the cortex. These movements were, however, profoundly influenced by labyrinthine activity, other sensory impressions, proprioceptive stimuli from the muscles of the neck, and probably also by the basal ganglia. A very large number of ocular palsies were theoretically possible. Dr. Gordon Holmes said that some of these had been recognised and these would form the subject of his address, together with observations on five patients who had been under his care.

The essential feature of a lesion of the pons in the neighbourhood of the sixth nerve nucleus was the loss of conjugate movements towards the paralysed side; these could not be obtained voluntarily, reflexly, or by any other means. The result was like that of an interruption of the final common path, but that the internal rectus contracted normally on convergence. The paralysis was therefore not of muscles but of movement. The possibility of loss of associated movements of the eyes, in spite of the integrity of muscles, nerves, and nuclei, had been described in 1883, and the first example had been recorded in 1895 (Oppenheim's case). Many cases manifesting very varied clinical signs had been recorded since then.

A typical case had first been seen by Dr. Gordon Holmes three months after the acute onset of the trouble. At that time the vertical and convergent movements were quite normal, but there was absolutely no deviation to the right. The eyes moved very slightly to the left of the midline, but the movement was incomplete, jerky, irregular, and required a great effort; it showed what Hughlings Jackson had called "punctuation of movement." The patient could, however, follow a moving object if it were not moved too rapidly or jerkily. If he fixed a stationary object and rotated his head his eyes remained fixed on the object; they therefore deviated fully and regularly—i.e., they responded normally to proprioceptive impulses from the neck muscles. When the eyes were fully deviated to the right he could not move them back to the centre; they only returned when the object was brought back or the head was rotated to the left. Later on he learned to bring his eyes back by blinking repeatedly and firmly closing the lids. In the street he relied on head movements, and if any object excited his attention just as he wanted to turn the eye would remain fixed and would not turn with the head, which was often very awkward. Reading was slow and awkward; he had to pick out each letter in succession. The end of each line offered great difficulty; almost the only therapeutic success obtained was in teaching him to fix his eyes on his finger at the end of each line, and move it back to the beginning of the next. Irrigation of the left ear with cold water, which normally causes vertigo and nystagmus with a quick component to the right and a slow one to the left, brought about no change in this patient, even after three minutes, and when 600 c.cm. of water had been used, but his outstretched arms deviated normally to the left. However, as soon as the irrigation ceased his eyes deviated slowly and forcibly to the left, and remained there for two or three minutes. When the right ear was similarly irrigated there was no nystagmus or deviation, but at the end of the process the eyes moved slowly to the right and became fixed, so that for a few seconds he could not even follow a finger or move them by rotating his head. He was remarkably tolerant to galvanic stimulation of the labyrinth; even 12 milliampères caused no vertigo, but it induced some deviation of the eyes to the right. Briefly, therefore, the quick phase of nystagmus was absent in this patient, who was by no means an isolated example. Another patient who had lost voluntary vertical movement showed forcible, almost violent, deviation upwards when rotated clockwise in a chair with the head bent to the right shoulder. With the head on the left shoulder both eyes deviated downwards, but in neither case did the rotation cause the normal nystagmus with a quick component downwards. Other observers had recorded the same phenomenon.

The Quick Phase of Nystagmus.

The highest levels of the central nervous system were probably concerned in the quick phase of nystagmus, which might be located in the cortex. On the other hand, typical labyrinthine nystagmus could be induced in animals from which the whole brain above the mesencephalon had been removed; the cortex might, however, play a more important part in the optic reflexes of the higher animals. There was no evidence in favour of the influence of the cortex on the quick phase of nystagmus, except that cold aural irrigation produced conjugate deviation instead of nystagmus in patients comatose from various causes. This phenomenon had been ascribed to inactivity of the cortex in coma.

The inevitable conclusion seemed to be that the symptoms seen in these patients were due to damage of some mesencephalic structure by a lesion which at the same time interrupted the paths of voluntary movement of the eyes in the immediate neighbourhood of the vestibular apparatus. In some of these palsies

stimulation of the labyrinth might make voluntary deviation possible. There had been much discussion of this relative movement, which was generally regarded as a labyrinthine reflex. Certain observations, however, were hard to explain on this hypothesis, and suggested a calcarine-cortical reflex. The weight of evidence, however, was in favour of the labyrinthine origin.

If the head of the first patient were passively rotated in a dark room with his eyes closed, the eyes deviated to the opposite side, but more promptly and forcibly to the right than to the left, while vertical movements could not be provoked. Since retinal impressions were certainly not active, this deviation must have been excited by proprioceptive impulses, either from the labyrinth or from the muscles of the neck, probably the labyrinth. Later on, when he had begun to recover, he was tied in a chair with his head fixed so that no neck movements were possible; his eyes were closed, the room was darkened, and the chair tilted to the right through 90°. No deviation was obtained, but by this time a fair range of voluntary movement to the left had been recovered. If the chair were tilted to the left through the same angle, the eyes deviated strongly to the right and stayed there. The deviation was always more marked if the movement were slow and uniform than if it were quick or irregular. The fact that the semicircular canals were more stimulated by rapid movement suggested that spastic deviation of the eyes in the direction in which movement was lost might be excited by the otoliths.

The Maculo-calcarine Reflex.

The ability to follow a fixed object if moved slowly and steadily had been noticed in most of the recorded cases, but was defective or absent in some. One patient could not bring her eyes above the horizontal; clockwise rotation in a chair with her head on her right shoulder produced no nystagmus or deviation, but opisthotonus and faintness. In some patients the eyes failed to follow an object, but they could usually follow it if it were moved at a uniform slow rate. There must be separate mechanisms involved in these two forms of deviation. No part was played by the labyrinth when the head was fixed; retinal impressions only were active. Some authorities thought the deviation was evoked by a short direct reflex through the superior quadrigeminal body and external geniculate body, but this was disproved by the fact that only objects in the field of attention and fixed by the conscious will could be followed; it was of no use to move some chance object. The reflex was a true cortical one in which the calcarine visual sphere was active. The affective stimulus must come from the region of the maculæ, therefore the reflex was maculo-calcarine. Apparently only impressions from the immediate neighbourhood of the fovea were potent, so that steady movement of the object was essential in order that the eyes might make a series of minute movements, each of which brought an extra-foveal image on to the fovea, in the same way that the first patient climbed from letter to letter in reading. The patient was, in fact, able to deviate his eyes through a very small angle. The path of the maculo-calcarine reflex was conjectural.

In two patients optic nystagmus had been investigated from another point of view. A drum with figures on it had been rotated vertically. Normally this led to nystagmus with its slow phase in the direction of rotation as seen by the patient. In this nystagmus the cortex intervened; it depended on the integrity of a path between the visual area and the frontal lobes. In one patient the drum produced normal nystagmus when rotated on a horizontal axis, but rotated on a vertical axis it caused no nystagmus but extreme deviation of the eyes in the direction towards which the slow phase of nystagmus would have occurred. The eyes remained fixed for several seconds. Another patient had lost voluntary upward movement. When the drum was rotated upwards on a horizontal axis the eyes deviated upwards spasmodically. It was, therefore, possible to evoke spasmodic deviation like that of labyrinthine stimulation by visual stimuli alone. The deviation was always in the direction of the slow phase of the absent nystagmus and persisted for some time, in one case for five minutes; the patient was unable by voluntary effort to return the eyes to the position from which they had been deviated. Neither labyrinthine nor proprioceptive neck mechanisms were concerned in this deviation, which must be caused by retinal or ocular stimuli. No other form of prolonged retinal stimulation had the same effect, so the cause was probably proprioceptive apparatus in the orbits or ocular muscles. There was a release of some subcortical mechanism, probably in the mesencephalon.

Oculogyric Crises.

One patient had complained that her eyes were "not under control." The first patient had given an intelligent description of the same sensation. Six months after the onset of his trouble, when rapid improvement was setting in, he had first experienced double vision, which he attributed to the spasmodic inturning of the right eye, which might remain fixed for a couple of hours. A few months later the left eye began to do the same thing, and might stay fixed for two or three days. Three years later, when some voluntary movement had been regained, the eyes would at times, especially first thing in the morning, turn to one side and stay fixed for a few seconds. The patient said they seemed "too loose" and that they "rolled about, so that he could not get them on the thing he wanted to see." This suggested the oculogyric crises of epidemic encephalitis. There were two types of spasm: spasm of individual muscles and conjugate deviation as in oculogyric crises, and the deviation excited by labyrinthine and retinal stimuli. Compulsive ideas and other mental stimuli appeared in oculogyric crises. The patient in whose eyes a rotating drum caused deviation complained of discomfort and, as deviation increased, of actual pain, until finally he sweated and shrieked that his eyes were being torn out of his head and the test must stop. He used the same word "agony," so often used by sufferers from oculogyric crises.

Although these patients eyes could not be moved voluntarily they often moved involuntarily, as if exploring space around them, when the attention was diverted from the eyes. This often suggested an hysterical origin of the trouble but really indicated lower level mechanisms which had escaped damage. Dr. Gordon Holmes said he had tried to provoke these movements, but had only succeeded in one man who was unable to deviate his eyes to the right. If his head was fixed and a loud and unexpected sound was made to his right, his eyes would sometimes come round for a moment in the direction of the sound. Oppenheim had also obtained this reaction to sound.

No anatomical findings had been published in these dissociated supranuclear ocular palsies. In most cases the trouble was undoubtedly a thrombosis or hæmorrhage. Localisation had been determined in two patients, and in both the site had seemed to be in the mid-brain. In a few of the earlier cases extensive bilateral softening of the forebrain had been found.

A vote of thanks to the President was proposed by Dr. A. S. BARNES and seconded by Prof. EDWIN BRAMWELL.

BIRKENHEAD GENERAL HOSPITAL.—Last week a new out-patients' department of this hospital was opened. The accommodation includes a large waiting-hall, the usual examination rooms, an orthopædic room, eye, ear, nose, throat, and dental departments, an almoner's office, and a buffet for the refreshment of patients from a distance.

"TINFOIL BEDS."—The Province of Mercia of the Ancient Order of Druids last week completed the payment of £1250 for the dedication of a bed in the Birmingham General Hospital. The money has been derived from the sale of tinfoil. The Druids have from this source endowed 20 beds in various hospitals since 1910.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Dr. J. F. HALLS DALLY delivered the presidential address before this Society on Oct. 4th. The following is an abstract of what he said on

LOW ARTERIAL BLOOD PRESSURE.

Hypopiesis includes all forms of absolutely low arterial pressure, whether these be physiological or pathological, temporary or permanent. Any pressure which falls below the limit of 110 mm. Hg systolic is said to be absolutely low, since those above 110, which may be relatively low for age, sex, and body-weight, fall into a different category. The diastolic is prone to vary more widely. One person, for example, may have a systolic of 100 and a diastolic of 80, while another may have a similar systolic of 100, but a diastolic of 55. Of the two pressures, the diastolic is of by far the greater importance, since it is a more constant indicator not only of the propulsive force of the heart and of the eliminatory capacity of the body, but also of peripheral resistance and vasomotor nervous tone. Hence, in the absence of disease of the heart muscle or valves, a notable fall in diastolic pressure, such as occurs in conditions of shock, points to peripheral damage to the vessels. A further illustration may be noted during the acute stage of influenza. Often the lowest average diastolic pressures are found in association with autonomic-endocrine disturbances, and the highest in nephritis. In general it may be said that the common range of absolutely low arterial pressures is from 110 to 90 for the systolic pressure, and from 80 to 60 for the diastolic pressure at adult ages in men, and slightly less for women.

Low Pressure as a Symptom.

Low arterial pressure is met with as a symptom of many diverse conditions. Physiologically it is induced temporarily as a result of quiet sleep, recumbent rest, fatigue, moist heat, the menstrual cycle, pregnancy, and labour. It tends to become permanent in athletes, in those of placid and gentle temperament, in routine occupations, uncomplicated old age and warm climates. It follows acute collapse and shock, intoxications and circulatory disorders. It may be congenital and persistent, or acquired and persistent. It accompanies nearly all the acute infections, chronic states attended by wasting, certain constitutional affections, the anæmias, chronic infections and intoxications, and as a terminal event. Thus the list of associated conditions is a long one, and since low arterial pressure has been stated by every previous observer to be compatible with perfect health, it will readily be appreciated that the scanty literature on this subject has reach no definite conclusions about its ætiology.

The only way in which the paradox becomes simple is first to dismiss groupings based solely on clinical or anatomical conditions of association, and next closely to examine hypopiesis in the light of modern conceptions of metabolism.

Any factors that upset metabolic balance cause either nutritional or endocrine disequilibrium, or both. Hormonic dysfunction in combination with vasomotor disturbance leads to variations in arterial pressure, and inability to respond to stimuli in adequate fashion tends to produce symptoms of insufficiency of which low arterial pressure is one of the most important. Thus I have sought a comprehensive and unifying principle that would explain the striking diversity of association of low arterial pressures, and would link them with the incidence under opposite conditions of high arterial pressures. This unifying principle has been arrived at along the lines of biochemical investigation, and by expansion of the well-known dictum of the late Sir James Mackenzie that "response to effort" is the most valuable test of circulatory efficiency. Hence I have stated as "The Biological Law of Hypopiesis" that "low arterial blood pressure is always to be regarded as an expression of a low vitality state." In other words, the hypopietic subject is never a normal individual, but exists in an inferior constitutional state in which he suffers from inadequate and low reactive capacity to normal and abnormal stimuli. Up to a point stimulation is beneficial but, even so, the reactive capacity is diminished as compared with that of subjects in perfect health, and, if stimulation be carried to a point just beyond the narrowed limits of reserve force, depression of vital energies rapidly ensue. The whole matter resolves itself into cellular, lymphatic, capillary, and endocrine balance.

For diagnosis and prognosis it is necessary (1) to differentiate the case capable of reacting to stimuli from that which is incapable, and (2) in the former case to assess the degree of reactive capacity. This may be done by hypodermic injection of 1 c.cm. of 1 in 1000 adrenalin solution. Pressures are recorded at the end of each five minutes for four consecutive readings. Such a series of observations shows that, whilst in some people after injection the pressure levels rise, in others there is little or no change.

Clinically, low pressure subjects tend to poor bodily build; they are thin and pallid, with narrow chests, low diaphragms, and small elongated hearts. Length predominates over breadth. Through errors of assimilation they are deficient in calcium and other vital salts. Hence they are prone to respiratory diseases. At school unstable and unsatisfactory they do little that is worth while. Mental response is slow, although given sufficient time a correct answer may be elicited. In games they are usually ineffective, and though able to sprint 100 yards, they cannot last a 220 yards' race, nor keep up with their fellows in long-distance runs. Lethargic and easily fatigued, the capacity for sustained interest is lacking, and they soon become bored. Notwithstanding a poor youth, as life goes on these subjects tend to improve, and, though during childhood and adolescence frequently requiring medical attention, seldom need a doctor after 50, and often live to a ripe old age. Tardy in development and sluggish in habit, they are static rather than dynamic, taking long in their profession or business to make good, but in later life are often found to have shot far ahead of their high pressure competitors, who in early days carried all before them in work and sports. The last stages of these high pressure people are worse than the first, whereas low pressure subjects, having fought through their initial disabilities, from the standpoint of longevity are welcomed by life assurance companies. Naturally there are exceptions to the rule, hypopiesis being at times encountered in those of sthenic habitus, but, even in these, careful investigation often reveals evidences of narrowed reserve capacity. The basic proposition that hypopiesis is invariably an expression of low vital capacity based on inherent or acquired nutritional defects has proved a stumbling-block to those who cite the performances of certain athletes in support of their contention that low arterial pressure is compatible with well-sustained effort such as long-distance running. If one analyses these cases, however, one finds that the majority do not belong to the class of absolute hypopiesis with systolic pressure below 110 mm. to which my law refers, but are in reality instances of relatively low arterial pressures ranging above 110.

Control of Low Pressure.

Touching control, low pressure cases fall into three groups:—

1. Those who require no treatment. The acquired class including many athletes who present no symptoms, and in whom the diagnosis is made solely by the sphygmomanometer, fall into this group, as well as those apparently fit for all ordinary affairs of life, and particularly for those above 50 in whom low pressures are often salutary.

2. Those in whom treatment is usually ineffective. With increasing knowledge this group becomes smaller. It includes diatheses, such as status lymphaticus, infantilism, myasthenia gravis, adiposis dolorosa, &c., which appear to rest upon a basis of disordered

endocrine function. Certain of these may be relieved by hormone therapy.

3. Those in whom treatment is required :—

(*a*) *General Measures.*—Daily life should be so regulated as to conserve energy and to raise the standard of vitality. It is a mistake to try to raise pressures too rapidly. In the former case metabolic balance may be still further upset, whilst in the latter throbbing in the head, followed by irritability, may be induced. Seldom is it necessary, or even possible, to raise pressures to any great extent. Experience shows that a rise in pressure of only a few millimetres makes all the difference between comfort and discomfort. One should be content gradually to raise pressures to and maintain them at a level which appears to be the optimum, checking results by readings at regular intervals. Diet should be nourishing, balanced, and easily assimilable. A sufficiency of vitamins should be ensured. In addition to ordinary drinks, a pint of water for each 5 st. of body-weight should be taken daily. As a general rule alcohol is best avoided, but in cases of gastric neurasthenia, or anorexia due to mental or physical exhaustion, a little stimulant with meals tends to restore vital balance. For exhaustion bed is indicated, followed by rest after the chief meals, and by early hours. Exercise should never be persisted in till breathlessness, palpitation, or other symptoms supervene. Horse-riding and dancing, within moderate limits, by sending up arterial pressure to more standard levels, act as beneficial stimuli. Excessive exertion depletes vitality and drops pressures to levels of discomfort. Graduated exercises, at first on the level and later on prescribed gradients, favour oxidation and counteract respiratory deficiency. These objects are also furthered by physical exercises of stretching and bending, in combination with deep breathing. For most hypopietics who live in cold, damp, and changeable climates holidays and sunshine are beneficial. The craving for sunshine is often greater than that for food.

(*b*) *Special Measures.*—Relaxation, passive movements, massage with graduated resistance exercises, ultra-violet radiation, static electricity, oxygen foam baths or injections, and hydro- and balneo-therapy all have their appropriate uses. In the majority of cases of hypopiesis endocrine dysfunction is present. Thyroid gland should not be given in too large doses, otherwise further instability may be added. It should be combined with other glands in accordance with definite indications. Next in importance comes the pituitary. Whole gland, in doses up to two grains, thrice daily is given until slight throbbing in the head or palpitation point to the limit of tolerance. Thereupon the dose should be reduced by half, continued for several weeks in accordance with pressure readings. A convenient method of giving posterior pituitary is by an intranasal spray. As pitrescin it may be given hypodermically. Whole gland pituitary and suprarenal when administered by mouth are best prescribed with a coating so as to render these glands insoluble in the gastric juice. Pure suprarenal crystalline substance (tab. supramedulla) is active by mouth, and may be given in dosage of gr. 1/1000 up to gr. 1/100 twice daily. Pluriglandular syndromes may originate in disorders of the gonads, but up to now I have found no testicular or ovarian preparation to fulfil its promise. Most parathyroid preparations by mouth are inert, parathormone hypodermically or intramuscularly being the only one that yields appreciable results. As regards drugs, ephedrine is one of the most generally useful. It possesses low toxicity and stimulate cardiac action, at the same time increasing basal metabolism and urinary output. The usual dose is gr. ½ in tablet form by mouth, or hypodermically if more rapid action is desired. For emergencies, cardiazol or coramine are serviceable. In cardiac failure, nothing equals standardised preparations of digitalis in sufficient amount. Similarly with auricular fibrillation, quinidine being also useful in certain of the more chronic forms if cautiously administered.

In acute infections low arterial pressure is brought about by a combination of vasomotor paresis with myocardial weakness and hormonic depletion. Treatment should be directed to whichever of these factors is in the ascendant. After diphtheria, influenza, and pneumonia it is essential that during convalescence the heart shall be given prolonged rest. For rheumatic fever rest must be continued for three months or even longer, otherwise a state of permanent low pressure may be entered upon.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

(*Continued from p. 774.*)

SECTION OF PHYSIOLOGY AND BIOCHEMISTRY.

Physiological Tests of Renal Function.

Prof. H. S. Raper (Manchester) being in the chair, Prof. E. B. Verney (London) opened the discussion by defining tests of renal function as observations of the response of the kidney to stimuli superimposed upon that which it is already receiving, and interpreted in terms of renal reserve. Renal reserves, he said, were *structural*, in that there was a large excess of renal tissue over and above that which was competent to carry on the excretory work during resting metabolism, and *functional*, represented by an inherent and variable capacity for the performance of increased work. He briefly reviewed the work of A. N. Richards and his colleagues which so clearly establishes the existence of these reserves, which, he held, constituted a first line of defence against the inroads of disease. First, as the work demanded of the kidney increased more units (glomeruli plus tubules) would become active and the rest pauses would be diminished. As the work demanded of each unit increased further its commencing failure would be reflected in changes in the composition of its secretion, a change exhibiting an approach towards the composition of blood plasma, such as is seen in the polyuria of chronic nephritics. This change in composition indicates a drain on functional, as against merely structural, reserves, and is probably initiated by a change in the glomerular capillary pressure.

An analogy was here suggested, said Prof. Verney, with the work of the heart as observed in the Starling heart-lung preparation, and he went on to develop the comparison between right auricular and glomerular capillary pressures. In the kidney, however, the work is osmotic in character, and to all intents a kidney engaged in producing a urine having the same composition as the protein-free filtrate of the blood plasma is doing no work; failure is complete. As Rose Bradford had demonstrated, a diminution in the amount of kidney substance led to an increase in the urine production of the remaining tissue. Similarly, a diminution in the anatomical reserves of the kidney was partially or completely compensated by an encroachment upon its functional reserves. Further guidance in the interpretation of a case was afforded by the facts that the excretion of urea and the substances eliminated by a similar mechanism was dependent mainly upon the *amount* of kidney substance, that of chloride mainly upon the *rate* of urine flow.

In renal failure there were theoretically three types to be considered: (1) that due to a severe diminution in the number of renal units; (2) that due to a fall in the magnitude of the pressure stimulus; and (3) that due to impairment in the tone of the secretory units, and possibly there was a clinical parallel to all three of these, or all might be involved together. Caffeine had been shown to affect the number of effective glomeruli and the pressure stimulus, and much might be learnt from the response to its exhibition under controlled conditions. The

surest indication of renal function would, he concluded, be given by administering urea or some such substances as phenol red, and comparing the elimination in a given time at any given concentration in the blood plasma with that of the normal. Any assessment of renal reserve was, however, fraught with difficulty.

Discussion.

Sir WILLIAM WILLCOX (London) said he regarded the information given by blood-urea determinations as most useful, especially in colon bacillus infections, and in chloroform and alcohol nephritis, but we must remember that the blood-urea concentration might be high without serious import. The indigo-carmine test was useful, but he did not use phenol-sulphone-phthalein as he had found that its excretion might be identical with that in the normal subject in a patient at the very onset of uræmia. Observations on the rate and concentration of chloride excreted were of great value. He had found caffeine citrate useful for a short time only, a few days at the most. There was no doubt, though it was liable to be overlooked, that uræmia might be purely cardiac in origin instead of being due to damaged kidneys.

Prof. E. C. DODDS (London) said that in assessing the value of a test we must ask ourselves to what aspect of kidney function the test was directed. The tests were of value in estimating the extent of the lesions in chronic nephritis, with or without œdema, in albuminuria prior to the administration of an anæsthetic, and in renal dwarfism. He recommended the estimation in the blood of urea, non-protein-nitrogen, cholesterol, and total protein, these last two being especially helpful in the œdematous type of nephritis. Patients with low cholesterol and total protein responded well to a high protein diet. As an aid to prognosis in cases of uræmia he recommended the estimation of blood calcium and phosphorus. He would like to emphasise his view that the mere estimation of blood-urea was liable to lead to a fallacy, if a look out was not kept for dehydration, which alone might account for a blood-urea of over 100 mg. per 100 c.cm. An estimation of the total solids of the blood in such a case might show a rise from 20 to 28 per cent. As regards urine analysis, if the urea reached 2 per cent. or over gross renal changes might be regarded as excluded.

Prof. J. SHAW DUNN (Manchester) described the results of his observations on animals, both normal and diseased. He had so far failed to produce experimentally the equivalent of human nephritis. In man the damage was usually glomerular at first, in animals there was a tubular necrosis affecting urea excretion, but water and chloride excretion was not affected till later, with the onset of œdema. He had repeated Frankson's work on urea excretion, urea being given by the mouth, and was able thus to induce the non-drinking rabbit to become a water-drinker for the elimination of the urea. In animals with nephritis urea by the mouth caused a large rise in blood-urea when on a dry diet, but no rise in urinary urea, and it was clear that the rise in blood-urea was greater than could be accounted for, as Prof. Dodds had suggested, purely by a concentration of the blood. He would like to stress the importance of free water-supplies for the excretion of urea, and the value of dry diet as a test of urea excretion.

Mr. H. D. KAY said that a simple and conclusive test, devoid of ill-effects on the patient, was still to found, but that the glycerophosphate test, which had now been tested on 70 cases at the London Hospital, had definite advantages over the urea-concentration and phenol-sulphone-phthalein tests. The principle of the test lay in the estimation of the excess phosphate excretion after the administration of sodium β-glycerophosphate, a chemically pure substance which was cheap and easily obtainable, harmless, and sterilisable. The routine of the test was as follows: At 8 A.M. the bladder is emptied, 400 c.cm. of water or weak tea is taken, and at 9.30 A.M. 10 c.cm. of a sterile 8 per cent. aqueous solution of the drug, corresponding to 550 mg. of phosphate, is given intravenously. The urine is taken in an hour, and its phosphates estimated after precipitating the proteins. The excess of phosphate may vary from nil (in chronic nephritis) to 250 mg. or more. After a solution had been prepared only two urinary analyses were required, and these could be satisfactorily performed by any sensible laboratory attendant. There was no decomposition of the substance to be estimated if the analysis could not be done at once, and the test was independent of the volume passed and unaffected by urinary pigment or blood. Their results so far had been as follows:—

1. A normal subject excretes at least 150 mg.
2. If there be less there is renal involvement, which varies inversely as the amount excreted.
3. The test compares favourably with any other test as regards the correspondence of its finding with the whole clinical picture.

Mr. J. B. MACALPINE (Manchester) spoke as a genito-urinary surgeon who was using these tests constantly. Estimation of the blood-urea, he found, brought precision to his knowledge, and was a great help as a supplement to the clinical picture. He regarded the tests as widening the rungs of the uræmic ladder; for example, before a prostatectomy he carried out bladder drainage until the blood-urea fell below the 40 mg. level. Sometimes the drainage provoked a profuse polyuria. He had got over 200 ounces from one case within 12 hours. This polyuria, when extreme, was an unfavourable omen, tending to end with a fatal anuria. As regards tests of the separate function of the kidneys this was a cystoscopic problem, and he liked the indigo-carmine test because it was simple, quick, and avoided ureteral catheterisation. He was unwilling, where it was avoidable, to catheterise a possibly aseptic kidney through a septic bladder, and he was not a strong believer in the quantitative value of the urea-concentration and phenol-sulphone-phthalein tests because he had satisfied himself that urine escaped around the average ureteral catheter. Mr. Macalpine also dealt with the problems of hypertrophy and the great value of pyelography, especially in stone, and particularly where a stone was seen on one side and the other kidney seemed to be inactive.

Dr. F. H. SMIRK (Manchester) described the effects on the normal and the nephritic of the administration of water, urea, and caffeine by the mouth. In the nephritic the loss of water was slow and delayed, and, after urea, the urinary urea concentration might even fall. After urea the sodium chloride excretion rises in the normal but not in the nephritic, and of 22 normals examined 18 had above 0·8 per cent. sodium chloride, while of 60 nephritics only 4 had above 0·8 per cent. He had tried giving grs. 5 of caffeine by mouth as a routine test, and found this increased the chloride excretion out of all proportion to the other constituents. The urea increase was less marked. Caffeine caused a greater rise in chlorides than urea did.

Prof. E. P. POULTON (London) took Prof. Verney to task for not developing, from his extremely valuable observations on kidney function, a physiological theory of Bright's disease. To the glomerular filtrate, which could be increased by caffeine, the tubule added urea and subtracted chloride and (at a more distal point) water. Bright's disease was primarily due to impervious glomeruli. He did not approve of Calvert's test, and thought that half the value of the urea-concentration test was lost if the total excretion was not considered as well as the concentration.

Mr. J. SWIFT JOLY (London) thought that, from the surgeon's point of view, an excretion of 1 gramme of urea per hour was satisfactory. He agreed with Prof. Poulton that for this water was necessary.

Reply.

Prof. VERNEY said there was so much disagreement as to the precise location of the functions of the

kidney in the organ itself that he preferred not to dissociate entirely glomerulus and tubule. He had been very pleased to hear of the use of the caffeine test by Dr. Smirk, and was full of admiration for Mr. Kay's contribution to the discussion.

SECTION OF PUBLIC HEALTH.

HUMAN TUBERCULOSIS OF BOVINE ORIGIN.

Dr. W. G. SAVAGE (M.O.H., Somerset), in opening the discussion, estimated the human deaths caused annually by the bovine tubercle bacillus at 2000 to 2300. Most of them were the deaths of children, and we had no knowledge as to how many non-fatal infections occurred. As to the extent of bovine tuberculosis among cattle in this country, he thought that about 40 per cent. of the cows were infected; that about 1 per cent. of the cows were "open" cases; and that about 0·3 per cent. had tuberculosis of the udder. He passed on to consider methods for the reduction of the prevalence of tuberculosis in cattle under five heads:—

(1) *Elimination of all tuberculous cattle*—viz., by the destruction of reactors. This could be done successfully in small areas—e.g., the Channel Islands. It was the official plan in the U.S.A., where 207,830 tuberculous cattle were slaughtered in 1927. The average percentage of reactors in the U.S.A. was only 3·3, and it would be impracticable in England with more than ten times that percentage of reactors to adopt the elimination plan.

(2) *Building up of herds free from tuberculosis.*—The procedure advocated by Prof. Bang was theoretically easy, but there were many administrative difficulties, and the method even in Denmark had not made the progress that was expected. The same principle had been followed in England with regard to Certified and Grade A (T.T.) milks, but the increase in the number of herds, which produced these two designated milks, had been slow. At the end of September, 1928, there were only 152 Certified and 207 Grade A (T.T.) milk producers—an entirely insignificant proportion of the whole. In Somerset, with at least 7300 producers, there were only 11 producers of these two types of milk at the end of 1928. This method could not, therefore, be regarded as a practical solution of our problem.

(3) *Elimination of particular classes of tuberculous cows.*—Theoretically we could reduce the infection among bovines and the risk to humans if we eliminated all infectious cows. In fact, however, partly from administrative but mainly from scientific difficulties these animals were not removed from the herds as soon as they became "open" cases, but only after they had done most of the harm they were capable of doing. The discovery of the infectious cases was not being followed up by a systematic examination of the other animals, and the cases of tuberculosis of the udder were not being detected until after the milk-supply had been affected for long periods. Systematic veterinary inspection was being urged as a means for the reduction of the amount of bovine tuberculosis. The first difficulty was that the ablest veterinary inspector could not detect infectious animals in their early stages, and the second difficulty was that financial considerations severely limited the frequency of inspection. The third difficulty was: Would the removal of some of the infection in the case of physiologically overlooked cows play any decisive part in reducing the amount of bovine tuberculosis? The figures available from places where routine inspection has been in vogue for years did not show any such reduction. He estimated the cost of an adequate system of veterinary inspection at about £300,000 a year, and was of opinion that veterinary inspection must stand or fall on its merits as a means of reducing bovine tuberculosis. The onus was on their veterinary friends to demonstrate that veterinary inspection could bring about such a reduction. If it could, it was a true preventive measure and worth the price.

(4) *Measures directly aimed at reducing the amount of tubercle bacilli in milk.*—When milk was found to contain tubercle bacilli, it was feasible in something like 60 per cent. of the cases to find an infective animal and eliminate her, but only an insignificant proportion of the milk-supply was tested for tubercle bacilli, and after the expenditure of public money in searching out the cow with the tuberculous udder the farmer was in no way penalised, but, on the contrary, received compensation for the cow. Pasteurisation of the milk-supply would probably largely eliminate the dangers of tuberculous milk. Its adoption would be a confession of failure, and the acceptance of the second-best.

(5) *Immunisation of cows against tuberculosis.*—Calmette's vaccine was on trial, and should be very fully tested, but the latest results were not very favourable.

After considering the various remedies advocated, Dr. Savage went on to summarise his suggestions. Routine veterinary inspection as a thing by itself he considered was not worth doing, but it occupied quite a different place as part of a comprehensive attack on bovine tuberculosis. The cow should be kept under much more open-air conditions. A more active educational campaign must be undertaken. Part of the onus of preventing the spread of infection must be put on the cow-keeper. Feeding problems and other factors likely to affect tuberculosis must be carefully considered. In such a comprehensive scheme immunisation experiments, the formation of tubercle, free herds, the operation of a modified Tuberculosis Order, and the routine veterinary inspection of cows will all find a place. If the agricultural community was not prepared to coöperate actively in the schemes of the State, and of local authorities for reducing the incidence of bovine tuberculosis, pasteurisation seemed less of an evil than "the present tinkering procedures." He himself, however, favoured the adoption of a comprehensive scheme such as he had indicated.

Discussion.

Colonel J. W. BRITTLEBANK (Chief Veterinary Officer, Manchester) thought that Dr. Savage was unduly pessimistic. He estimated the loss to agriculture through bovine tuberculosis at £1,000,000 annually. He thought something had been done to reduce the incidence of tuberculosis by veterinary inspection in Manchester from 1904 onwards. The West Riding, Cumberland, and Durham had all adopted veterinary inspection, and such schemes should not be limited to inspection, but include feeding, housing, management, &c.

Mr. A. GOFTON, M.R.C.V.S. (Edinburgh), thought Dr. Savage's figures of the incidence of bovine tuberculosis were too low, and that the percentage of cows with tuberculous udders in Edinburgh was nearer 0·5 than 0·3. The designated milk scheme had made a great appeal to the agricultural community, and the safe milk in question, in both Edinburgh and Glasgow, very largely went to the children who were most at risk. He regarded the Tuberculosis Order as purely a public health measure, and he believed that the Order and veterinary inspection had been instrumental in bringing about a reduction in the incidence of tuberculosis among Edinburgh children.

Dr. F. H. MORISON (M.O.H., Cumberland) thought that 5 per cent. of the cows had diagnosable tuberculosis. He referred to the dope use of tuberculine, and to the difficulty in maintaining herds free from tuberculosis. He had found Certified milk highly infected with tubercle bacilli. The graded milks were a failure, and pasteurisation was only doubtfully safe. He believed that milk dried by the roller process was the best solution, and he looked forward to the establishment of milk-drying factories throughout the country.

Dr. T. EUSTACE HILL (M.O.H., Co. Durham) said that his county had just appointed a chief veterinary surgeon and four whole-time assistants. They would both inspect the cattle and preach

sanitation. He anticipated an enormous improvement in the sanitation of the cow-sheds as a result. When milk samples were found to be tuberculous they usually succeeded in finding the offending cow. They had found the direct microscopical test quite useful in saving the delay incidental to the biological test.

Dr. MIDDLETON MARTIN (M.O.H., Gloucestershire) said that their cattle were examined every half year by part-time veterinary surgeons, but that they seemed to get the same percentage of emaciation, &c., at each inspection.

Dr. VEITCH CLARK (Manchester) stated that they had succeeded in maintaining a tubercle-free herd for supplying the local hospitals.

Reply.

Dr. SAVAGE remarked that Colonel Brittlebank had not answered his question as to the resistance to infection of a physiologically overworked cow. If inspection was to be adopted it must be thoroughly done, and at least every quarter, and, of course, if the cows were out at grass, it was the farmer's business to bring them in for the inspection.

SECTION OF ANÆSTHETICS.

SPINAL ANÆSTHESIA WITH SPINOCAIN.

Dr. GEORGE P. PITKIN (New Jersey, U.S.A.) gave an account of the experimental work done by himself and his co-workers in producing what he claims to be a controllable spinal anæsthetic. They set out, he said, to produce a spinal anæsthetic that would minimise toxic reactions, be certain in effect, constant in duration, act in direct ratio to the amount of anæsthetic agent injected, and be without effect on the heart action, vascular tension, and respiratory function. The chief factor in the control of a spinal anæsthetic being to prevent its diffusion in the subarachnoid space, they had tried to find a substance which would prevent this diffusion until the anæsthetic had been absorbed. They had evolved what, for the lack of a better name, was called amyloprolamin; it was derived from gliadin, the mucilaginous content of wheat starch. They had also determined the capacity of the dural sac at various heights in adults and in children of different ages. Novocain was chosen from the other drugs used in spinal anæsthetics as giving a complete anæsthesia of the sensory nerves, affecting the tactile and muscular sensation only slightly, not increasing the cell count of the spinal fluid, and not raising the intradural pressure. Faulty technique was responsible for the production of hypotonic headaches, which were more often seen when the puncture was made with the patient sitting up, owing to the greater amount of spinal fluid lost. To prevent extensive trauma of the dura the use of needles of small gauge with a short bevel was advisable. As a result of these experiments and reports on over a thousand inductions they were now justified in asserting that spinocain was controllable within the dural sac. This method of producing spinal anæsthesia had been developed as a protection to the surgeon, owing to the difficulty of procuring expert anæsthetists, the large proportion of anæsthetics in the United States being given by nurses who were merely technicians. He considered it important that the technique of giving spinocain should be in expert hands. Dr. Pitkin concluded by showing on the screen the essential points of his method.

Dr. FRANK A. KELLY (Detroit) limited himself to the clinical aspects of controllable anæsthesia. He said that Dr. Pitkin's technique had negatived all previous objections to spinal anæsthetics. The transitory nature of the anæsthetic had been corrected by the addition of a mucilaginous substance, the height and extent of the anæsthesia was controlled by the tilting of the table, the depression in blood pressure—so often a serious objection in the past—was prevented by the preoperative injection of ephedrine. Another safety factor of great importance was the use of the lighter gravity solution, for if a serious fall in blood pressure occurred the head of the table could be lowered so as to prevent cerebral anæmia. What they called low anæsthesia was a true sacral or caudal anæsthesia where only the perineum, vagina, and rectum were involved, together with the saddle area on the inner side of the thigh. In order to obtain this, one-half of an ampoule of spinocain was injected at the fourth lumbar interspace, and the patient immediately tipped into at least a 15° Trendelenburg position, the degree being reckoned by Dr. Pitkin's tiltometer. What they called high anæsthesia extended to the costal arch, and was obtained by injecting the anæsthetising agent into the first lumbar interspace and mixing it with 6 c.cm. of spinal fluid; when this anæsthesia extended to the costal arch it was considered complete, and the patient was placed in the Trendelenburg position to stop the upward extension. His experience in doing very high abdominal work was that if the anæsthesia was carried to a level high enough to allow the operation to be completed without difficulty, some patients complained of difficulty in breathing and a feeling of weakness. It was therefore his practice to limit the spinal anæsthetic, and to supplement it with an intercostal block of the eighth, ninth, tenth, and eleventh costal nerves at the angle. Ephedrine before the spinal injection prevented any fall in blood pressure; the drug, given intramuscularly or subcutaneously, acted as rapidly as when it was given intravenously, in contrast to adrenalin which, in skin or muscle, caused a local ischæmia, but was quickly absorbed intravenously, though its action was transitory. In a cinema demonstration Dr. Kelly showed points of technique, including a common fault in the position of the patient, resulting in a "corkscrew spine." He demonstrated the presence of peristaltic action during an abdominal operation under spinal anæsthesia, and explained it by the unopposed action of the sympathetic and vagal nerves, due to the blocking of the vasomotor nerves. Barbital, he said, was regarded as an antidote to novocain poisoning, but he had never had occasion to use it.

Dr. E. FALKNER HILL (Manchester) agreed that Dr. Pitkin's method did away with previous objections to spinal anæsthesia. From his own experience of the method, however, he was inclined to think that there was some fall in blood pressure due to operative procedure, but this was not a bad thing for the patient. He gave illustrations from bad surgical risk cases in some of which he had given chloroform and ether as well. He did not think that strychnine should be included in the anæsthetic solution, as it increased the irritability of the spinal canal.

Dr. A. L. FLEMING (Bristol) said he hoped Dr. Pitkin and Dr. Kelly might come to give their patients the benefit of inhalation anæsthetic as well. Peristalsis, he thought, was not always inhibited under an inhalation anæsthetic; he had seen it on one or two occasions.

Dr. K. B. PINSON (Manchester) gave his experience of stovaine and novocain anæsthesia; he had had only 55 per cent. of complete success on all counts, from the point of view of patient, operation, and recovery. He was much struck by the absence of shock with this method. He considered that 45 per cent. of failures made the use of spinocain something of an experiment; they might have been due to the human response to novocain. An improvement in the solution might obviate the difficulties.

Dr. W. SALISBURY (Northampton) narrated his success with stovaine and glucose in shock-producing operations. He always used the heavy solution, and attributed his success to attention to small points of technique.

Dr. DONALD said he had had a happy experience of spinocain in some cases; his six partial failures were all in young virile men with acute appendicitis. He thought that women and patients with lowered resistance did better under spinocain. He found it

difficult to decide whether the good effects he noted were due to the spinocain or ephedrine.

Dr. E. A. GERRARD (Manchester) gave an account of the use of spinocain in obstetrical work, noting the ease with which the cervix dilated, the extreme relaxation of the perineum, and the delight of the patient. The parturient woman could bear down better, because the pressure of the head on the perineum was not too painful. For instrumental delivery he advised that the anæsthetic should be carried higher than the sacral or caudal type; pituitrin should in any case be used with care.

Demonstrations.

Dr. G. A. SCHWARTZ (New York) gave a demonstration of the apparatus used in intratracheal anæsthesia and resuscitation by the Flagg method. He showed on the screen the intubation of the larynx by a flexible catheter, and a simple method of maintaining the anæsthesia by fixing a tube connected with the catheter to a can of ether. He also demonstrated on the screen the resuscitation of a new-born child with oxygen and carbon dioxide through a pharyngeal tube.

Dr. F. L. RICHARDSON (Boston, U.S.A.) gave a cinema demonstration on the teaching of anæsthetics. The student, he said, should be taught to give one or two drugs well; it was not possible to teach everything by the film, but important points could be brought out by slowing down the projection. The demonstration included the administration of spinocain and ether vapour.

Avertin.

Dr. G. EDWARDS (London) read a paper on the use of avertin or tri-brom-ethyl-alcohol, a white crystalline solid, soluble in water to the extent of 3½ per cent. at body temperature. Introduced in solution into the rectum it was readily absorbed, appearing in the urine in combination with glycuronic acid. Avertin was a basal narcotic; once a patient was under its influence only a very small quantity of inhalation anæsthetic was required to make the anæsthesia complete. The anæsthetic could be given in the ward without fuss, induction was gradual, and though the narcosis had been light there was no memory of anything unpleasant. Avertin was of particular value in dealing with highly nervous patients, with cases of Graves's disease, and with children. Avertin was contra-indicated in ulcerated conditions of the rectum and colon, in the presence of severe renal and hepatic disease, acidosis, and serious blood diseases. On the other hand, cases of hyperthyroidism tolerated massive doses of avertin and could eliminate them quickly. The fall in blood pressure was usually within the limits of that observed in deep sleep, between 10 and 30 mm. Hg. The respiratory centre was depressed, and a slight cyanosis was usually observed, more particularly after a preliminary dose of morphia. Marked cyanosis did not occur if the dose had not exceeded 0·1 g. per kilo of body-weight, and the airway was kept clear. Anæsthesia took 20–30 minutes to reach completion, the ocular reflexes disappeared in the usual way, and a skin reflex might remain. A sudden blast of strong ether vapour might produce a cough—a useful preliminary test to determine how much inhalation anæsthetic would be needed. The actual administration was simple; some observers thought it good to give a sedative overnight. The usual duration of narcosis was 1½–2 hours from the time of injection; about four hours from the start the patient was usually quite conscious. In only one case had he seen any trouble directly due to the avertin anæsthesia; in this case [1] the patient died 20 hours after the administration of a dose at the rate of 0·125 g. per kilo. Probably a deficiency of thyroid secretion had diminished the power of detoxicating and eliminating the drug. In delayed return to consciousness the respiration might be stimulated by injection of lobeline or inhaling carbon dioxide and oxygen, the circulation by injections of ephedrine.

Dr. E. F. HILL (Manchester) suggested that avertin, combined with spinal anæsthesia, would be an ideal anæsthetic.

Dr. H. P. FAIRLIE (Glasgow) described a case in which the patient did not respond well to avertin, but with gas-oxygen the operation went off well. The trouble with avertin began six hours after operation, when there was intense rectal irritation with diarrhœa and passage of mucus. He considered the death-rate with this method was unduly high.

[1] See THE LANCET, 1929, i., 1365.

Reviews and Notices of Books.

PHYSIOLOGY.

Bainbridge and Menzies' Essentials of Physiology. Sixth edition. Edited by H. HARTRIDGE, M.A., M.D., Sc.D., F.R.S., Professor of Physiology, University of London. London: Longmans, Green and Co. 1929. Pp. 497. 14*s*.

Elements of Physiology. By E. G. MARTIN, Ph.D., Professor of Physiology, Stanford University, California; and F. W. WEYMOUTH, Ph.D., Associate Professor of Physiology in the University. Philadelphia: Lea and Febiger. Pp. 784.

THE sixth edition of Bainbridge and Menzies' "Essentials of Physiology" has been revised and brought up to date by Prof. Hartridge. The book retains its original character—that is, it gives in a clear, dogmatic manner a brief but adequate account of human physiology. Certain sections are perhaps too brief—for example, the section on reproduction. Prof. Hartridge has, however, found space to mention a great deal of new work without materially increasing the size of the book. The new chapters on exercise and work, and on the nervous system are excellent—the diagrams in the latter being particularly good. Unfortunately, a few mistakes have been allowed to creep in—for example, on p. 495 we read that "Parkes and his co-workers have extracted from ovarian tissue a substance 'œstrin' which causes menstruation when injected into the blood," whereas, of course, it does not. The use in the index of thick type for the principal subdivisions under each letter facilitates quick reference to any subject.

Dr. Martin and his colleague have written their book with the object of expressing a point of view rather than that of teaching examination students. They explain in their preface that they have tried to present the subject of physiology "by development of two key-principles." The first consists in the application of physico-chemical laws to physiological processes, and the second is that "every protoplasmic cell is inherently a self-sustaining system." The book is divided into four chief sections, the first two of which contain material usually found in works on general physiology. It is written with little regard for economy of words; moreover, these tend to be arranged in sequences which seem strange to English readers. The second section of the book deals more systematically with human physiology. It is, however, very unequal, and the arrangement makes it difficult to read. For example, the section on the respiratory system does not mention hæmoglobin—for that we must turn to the earlier section on general physiology; in the section on digestion, the pancreas is discussed without mention of insulin, and here, too, we must refer back to the earlier section for complete information. Great prominence is given to the special senses, at the expense of other subjects; the section on the special senses contains 216 pages, that on the central nervous system only 45. From these examples it will be seen that the "key-principles" have not enabled the authors to give us a very clear general view of physiology.

RECENT ADVANCES IN SURGERY.

Second edition. By W. H. OGILVIE, M.A., M.D., M.Ch. Oxon., F.R.C.S., Assistant Surgeon, Guy's Hospital; Surgeon to Out-patients, Hampstead General Hospital. London: J. and A. Churchill. 1929. Pp. 495. 15*s*.

THE revision of this useful book has been well done, and the reader who depends upon one manual to keep him abreast of surgical thought will find that the author has not failed to record any of the important advances in surgical science since the first edition was published. Even more assiduous readers of surgical literature will be grateful for the admirable summaries of various topics of interest here set out. The book is more than a record of new surgical methods, good or bad; it is a discriminating account of what has happened in recent years and well deserves its title. Its compilation must have been difficult. Certain omissions and occasional evidence of reluctance on the part of the author to give adequate prominence to views or methods which he regards unfavourably are not wanting. But generally he has shown wise judgment both in his selection of material and in the manner of its presentation.

TREATMENT OF RHEUMATOID ARTHRITIS.

By A. H. DOUTHWAITE, M.D., F.R.C.P. Lond., Assistant Physician, Guy's Hospital; Honorary Physician, All Saints' Hospital. London: H. K. Lewis and Co., Ltd. 1929. Pp. 80. 6*s*.

PRACTITIONERS will find this an interesting and useful book. The author skilfully avoids the dogma of any extreme school of thought and sets out the known facts of an obscure subject with clarity. On the question of focal sepsis he is eminently sane, and in dealing with treatment he has not overlooked the need for practical advice on such subjects as climate and the correction of deformities. These are of great importance but are often neglected when the treatment of rheumatoid arthritis is being considered. On the endocrine factor and on metabolic features of the disease his views would invite comment in another connexion, but the interest of these matters is too academic to justify criticism of a book which is essentially practical.

GYNÆCOLOGY.

By LYNN LYLE FULKERSON, A.B., M.D., F.A.C.S., Instructor in Obstetrics and Gynæcology, Cornell University Medical School. Philadelphia: P. Blakiston's Son and Co. 1929. Pp. 842.

THE scope of gynæcology in America extends to the urinary system, the lower bowel, and the lower abdomen generally, and the impression given by this book is that gynæcology as we know it is to be correlated with diseases of the urinary tract and rectum rather than with the physiology and pathology of parturition. This attitude finds no favour in this country, but that will not prevent this work, which includes operations on the intestines and abdominal wall, from finding interested readers among general as well as gynæcological surgeons. The systematic teaching given by Dr. Fulkerson is clear and up to date, and many erroneous statements which make their wearisome appearance in successive editions of well-known books are corrected. For example, chronic endometritis is correctly described as a rare disease. In America radium has entirely replaced operation in the treatment of carcinoma of the cervix, and the radical operation is considered to be so obsolete that it is not even described here. On the other hand, some of the operations advised are seldom, if ever, performed in this country, particularly the exploration of the pelvis through the anterior and posterior fornices of the vagina.

Rather less than half the book is devoted to operative surgery. A good deal of space is wasted on the author's methods of sterilisation and theatre management. Many useful points are to be gleaned from the operations for displacement and prolapse of the genital tract which include George Gray Ward's technique for prolapse of the pouch of Douglas and rectocele. The author seems to like ligaturing pedicles by means of continuous sutures. A method of performing hysterectomy in which not only are all the vessels ligatured by one continuous suture, but the pelvic peritoneum is closed by the same suture, seems on paper to be a risky procedure. Myomectomy through the anterior fornix is not likely to be practised by British gynæcologists; it appears to have every disadvantage and no advantage over addominal myomectomy. There are over 600 illustrations in this book and they are exceptionally clear and apt.

THE STUDY OF PHYSIC.

An Introduction to the Study of Physic. By WILLIAM HEBERDEN. Prefatory essay by LEROY CRUMMER. New York: Paul B. Hoeber; London: Humphrey Milford, Oxford University Press. 1929. Pp. 159. 10*s*. 6*d*.

Dr. Crummer here prints, for the first time in book form, the manuscript of the elder Heberden's introduction to the study of physic and gives a reprint of the same author's classical account of angina pectoris—the whole being a reprint, with additions and corrections, from "Annals of Medical History" (Vol. X., Nos. 3 and 4, 1928). The author was lucky enough to discover in a second-hand London bookshop three manuscript volumes, one of which was the introduction to the study of physic in Heberden's holograph, and with his signature at the end of the preface. Comparisons with known Heberden manuscript at the Royal College of Physicians of London made it quite clear that this is a genuine Heberden item, and while congratulating the author on his good fortune, we may thank him sincerely for giving us the contents of a book by a very celebrated English physician, about whom we have always wished to know more. Heberden appears to have written the book for the benefit of any of his children who might contemplate taking up the study of medicine. It contains much shrewd advice as to what books to read and what practical studies are to be undertaken. Heberden's spelling is expressly preserved, but one or two odd mistakes have been overlooked in passing the essay through the press; Heberden was, we think, too good a classical scholar to have written "Demonsthanes" for Demosthenes, and there is a sad hash of Homer's description of Machaon on page 71. These slight blemishes do not detract from the value of this book as an addition to medical history. It is enriched with a fine representation of Beechey's portrait of Heberden, facsimiles of the preface to the book, and a letter from Heberden to William Hunter, the title page of the "Commentarii," and other illustrations.

ACUTE INFECTIOUS DISEASES.

Second edition. By JAY FRANK SCHAMBERG, A.B., M.D., Professor of Dermatology and Syphilology, University of Pennsylvania; and JOHN A. KOLMER, M.Sc., M.D., D.P.H., D.S.C.. LL.D., Professor of Pathology and Bacteriology, University of Pennsylvania. London: Henry Kimpton. Pp. 888. 50*s*.

IN view of the mass of new knowledge accumulated during recent years on the acute infectious diseases this text-book has been thoroughly revised. Although a third of its bulk is devoted to the study of vaccination and small-pox, this volume deals minutely with the diagnosis and treatment and general care of practically all the infectious diseases met with in this country. One important omission is enteric fever, a disease which, though happily rare nowadays, is still worthy of a place in such a work as this. Many interesting tables and temperature charts are included, also 161 engravings and 27 full-page plates. All of these are

excellent and lifelike; among them are pictures showing the old method adopted of holding a patient during the operation of intubation in laryngeal diphtheria. The writers themselves recommend a slightly different technique, with the patient lying down instead of sitting up in the nurse's arms. Their ideas on the feeding of intubation cases are very sound. The book is undoubtedly an excellent one and provides interesting reading. The authors quote much evidence obtained from America and from British sources in support of their opinion that small-pox is commonly spread by aerial convection. Some public health authorities in this country may agree with this view, but experts on infectious diseases are rightly sceptical on this subject. Evidence to be valid must include proof that rigid precautions have been taken to ensure that the infection could not have been transmitted through the staff of an institution. The chapters on diphtheria, scarlet fever, and measles have been largely rewritten in order to include an account of the extensive work which has been done, chiefly in America, on the treatment and prevention of these diseases. The Schick and Dick tests are clearly described, and the methods adopted—in the attempt to prevent other infectious diseases such as measles and chicken-pox—are carefully considered. The clinician will find this book useful, since the authors have made full use of the recent contributions to the literature of the subject—not only by American authorities but also by European ones—and have thoughtfully dotted the pages with many useful references.

SKIN.

Its Uses in Six Phases. By LEWIS E. HERTSLET, M.R.C.S. Eng., L.R.C.P. Lond. London: J. and A. Churchill. 1929. Pp. 206. 10*s.* 6*d.*

THIS book will gladden the hearts of the fresh-air and sunlight devotees, who from a handful of so-called cranks have in the past few years developed, the world over, into national armies whose ranks will yet engulf the faltering remnants of the overclad. It was written, the author claims (p. 107), without a headache. It is doubtful if the careful reader will so easily escape, for the information has been collected from no less than 106 essays and papers on a variety of dermatological, social, actinotherapeutic, hydrotherapeutic, and physiological subjects; all the authors receive their measure of thanks and acknowledgment in tabulated form. The skilful compounding of their statements has resulted in a veritable encyclopædia of the functions of the skin such as is contained in no single text-book hitherto published. To those with sufficient power of concentration the work will reveal new aspects of the subject. We trust it will find its way to the precincts of those who have the power to raise the blind and let in the sunshine on the commonwealth of peoples.

THE CASE OF MISS R.

By ALFRED ADLER. Translated by ELEANORE JANSEN and FRIEDRICH JANSEN, M.D. London: George Allen and Unwin, Ltd. 1929. Pp. 306. 12*s.* 6*d.*

THIS is an autobiography, beginning in childhood and leading up to the development of a compulsion neurosis soon after puberty, of a young woman. Her motives are an open book to Dr. Adler when elaborated in the light of his belief that the raison d'être of neurotic disease is the attainment of a goal by influencing the environment. The translators' preface explains that such is the way of all neuroses and psychoses, "for whose recognition and description, the theory, and for whose prophylaxis and treatment, the practice of individual psychology serves." Dr. Adler's views are marked by simplicity, in contrast to the difficulties of psycho-analytical theory, and appeal to the widespread feeling that the neuroses are nothing but unconscious malingering—an element admittedly so common that to handle it vigorously in Adler's way is often sound practice. Yet the reader, if he is familiar with cases in which symptoms are concealed by the patient and do not interfere with his task in life, may decide that Adler's individual psychology is not sufficiently individual, since neurotic symptoms can exist without the aim that he postulates as the foundation of their ætiology and the point of therapeutic attack. Except for more detailed anamnesis and explanation, Adler makes but little advance upon the medical use of morale and exhortation employed by Dejerine at the end of the last century; we can picture him using irony, severity, or kindness to urge the patient towards the renunciation of symptoms, and in this good work his certainty of belief in his own methods must give him an advantage denied to people of less confident temperament. His book will be useful to those who incline towards the methods of explanation and persuasion in the treatment of psychoneurotic disability.

A TEXT-BOOK OF MATERIA MEDICA.

Fifth edition. By HENRY G. GREENISH, D.-ès-Sc., F.I.C., F.L.S., Professor of Pharmacy to the Pharmaceutical Society of Great Britain and in the University of London. London: J. and A. Churchill. 1929. Pp. 561. 25*s.*

IN spite of the now half-forgotten depreciation of Huxley, materia medica has continued to occupy a place in medical study, and even to take on a new attraction as pharmacognosy, the generalised knowledge of such remedial agents as are selected for the purposes of a curriculum. Prof. Greenish's text-book has, for the past 20 years, been included among the really indispensable manuals. In the five years which have elapsed since the issue of the fourth edition, the work has been thoroughly overhauled; the historical introduction has been extended, and several illustrations have been added. The section on animal materia medica is not intended to deal exhaustively with anatomical features, which must be studied in other authorities.

The pattern of the work is clear and easy to follow. For example, if we turn to senna, we find (page 41) its chief constituents, and certain other substances of which the chemical constitution is specified; we are then introduced to several laxative drugs which "form a natural group allied by the similarity of their constituents" owing to the presence of oxymethylanthraquinones. An authoritative generalisation of this kind gives the student confidence; it delivers him from bondage to dry facts, and affords some inkling of the relation between chemical constitution and physiological effect.

INCOMPATIBILITY IN PRESCRIPTIONS AND HOW TO AVOID IT.

New edition, revised and enlarged. By THOMAS STEPHENSON, D.Sc., Ph.C., F.R.S. Edin., F.C.S. Edinburgh: "The Prescriber" Offices. 1929. Pp. 61. 4*s.* 6*d.*

THIS useful handbook first appeared in 1915 as a 32-page pamphlet. A revised edition and several reprints have borne witness to its acceptability, and it has now been subjected to further revision and expansion. The second half of the book, arranged in dictionary form, is easily consulted, and is likely to prevent many mistakes. Few busy prescribers, for instance, would be prepared to name off-hand the substances incompatible with mercurochrome. In a future edition two statements (on pages 47 and 31 respectively) should be modified. The well-known tincture of iodine of the French Codex, 1908, was, by ministerial decree, superseded in 1922 by a "teinture d'iode officinale," containing potassium iodide, and reduced in strength in iodine, and this important change should be made clear. Secondly, recent work by D. B. Dott has disproved the general statement that alkalis decompose acetylsalicylic acid. We find little to criticise in this work which is of proved value.

THE LANCET.

LONDON: SATURDAY, OCTOBER 19, 1929.

THE CHICAGO SURGICAL CONGRESS.

ON Monday last, Oct. 14th, the annual Clinical Congress of the American College of Surgeons was opened, and the proceedings will last throughout the week, while arrangements are outlined extending the time limits of the Congress until Oct. 30th in order to provide an opportunity for the congressists of visiting clinical centres in the environment. No more suitable city in the world exists for holding a massively attended congress than Chicago. Public buildings are on the large scale which characterises the architecture in the capital of the Middle West; the Murphy Hall, a remarkably handsome example of modern florid architecture, makes an excellent centre of reunion; such hospitals as the Wesley Memorial Hospital, the Cook County Hospital, St. Luke's Hospital, and the Montgomery Memorial Hospital afford perfect opportunities for carrying out an extensive clinical programme; while some 20 huge hotels, many of them placed within short walking distance of the headquarters of the Congress, afford accommodation at graded rates for an unlimited number of visitors.

Three addresses will be delivered in plenary congress when members can be accommodated in the ball-room of the Stevens Hotel; one by the new President of the American College of Surgeons, Major-General MERRITTE W. IRELAND, Surgeon-General of the United States Army, ushers in the meeting; one by Dr. GLENN FRANK, President of the University of Wisconsin, is directed to the convocation of Fellows; and a scientific discourse, the Murphy Oration, is delivered by Prof. D. P. D. WILKIE, Professor of surgery in the University of Edinburgh, in which he reviews the present position of abdominal surgery. This oration is published in THE LANCET to-day and it is apposite that, in the city where MURPHY was so long a leading figure, the principles which at present prevail in abdominal surgery should be brought to mind. We have here a résumé of knowledge along lines where MURPHY himself made many valuable contributions, for although he traversed the whole field of his art his most fruitful energies were directed towards the improvement of abdominal surgery. MURPHY was gifted alike with remarkably clear vision, a fierce power of concentration, and boundless enthusiasm, and these qualities, which characterise all his work, were nowhere better exemplified than in his early endeavours to extend the range and improve the technique of operative procedure in connexion with the abdomen. MURPHY was one of the pioneers in the brisk and important development of American surgery which became so marked some 20 years ago, and his name occurs among the first Board of Regents of the American College of Surgeons, now engaged in its nineteenth annual session. The College derived much of its initial plan from the constitution of the Royal College of Surgeons of England, and acknowledged this indebtedness by inviting Sir RICKMAN GODLEE, then President of the English College, to be present at its first congregation held on Nov. 13th, 1913, at Chicago. A fundamental difference between the English and the American body is the absence, in the latter case, of strict examinational tests; but an elaborate system of scrutiny has been designed to keep the list of Fellows up to the standards demanded by the College, while the machinery of the College has been used, to great practical advantage, as a lever for securing proper surgical provision at provincial hospitals.

The subjects selected at the Chicago Congress for the operative clinics and demonstrations and the scientific symposia indicate a meeting of general and practical interest upon more or less familiar lines; but ample use is to be made of motion pictures in association with the spread of lymphangitis, with the story of intestinal peristalsis, and other phenomena where these films have been often employed. Pictorial representations also accompany the expositions of difficult labour and cardiac movements, and other communications—such as those upon inguinal hernia and rabies, where pictorial help will be a novelty to most of the audiences. The valuable interest taken by the College in the provision at hospitals of proper accommodation and equipment is represented at the meeting by a conference on hospital standardisation.

THE STOMACH IN PERNICIOUS ANÆMIA.

INTEREST in Addisonian pernicious anæmia has received an impetus during the past few years from the discovery, announced by G. R. MINOT and W. P. MURPHY in 1926, of the successful treatment of the disease by means of liver. Since then various chemical fractions of liver have been isolated, and by their critical employment in the treatment of patients much knowledge has been gained of the changes induced in the patient, and of the nature of the effective principle, which is probably a nitrogenous base. These discoveries have naturally led to further speculation about the essential nature of the disease, and several new hypotheses concerning its causation have been advanced. MEANS and RICHARDSON[1] have reviewed the new facts available, and conclude that the disease must be in some sense a deficiency rather than an infectious, toxic, or neoplastic condition. However, they conclude that it is apparently not in close relation to the already recognised deficiency diseases, since the diet of the great majority of normal individuals will not suffice to relieve the condition once developed. MEANS and RICHARDSON believe that to develop pernicious anæmia some defect of the individual is probably necessary, as well as some defect in the diet. DAVIDSON[2] has reached somewhat similar conclusions, and has considered the liver as the possible site of formation of the effective principle in normal individuals. The attractive simplicity of this idea has appealed to others, notably S. HARRIS and E. SCHWARZ, but the fact that the kidney, and apparently also the stomach, of the pig [3] has been shown to contain the effective substance, makes it difficult to prove that the principle is formed in the liver, or, indeed, in any of these organs. It has, however, been repeatedly observed in the past that the stomach contents of the patient with pernicious anæmia almost invariably show no free hydrochloric

[1] Means, J. H., and Richardson, W.: Jour. Amer. Med. Assoc., 1928, xci., 923.

[2] Davidson, S.: Edin. Med. Jour., 1928, xxxv., 322.

[3] Sturgis, C. C., and Isaacs, R.: Jour. Amer. Med. Assoc., 1929, xciii., 747; Sharp, E.: Ibid., 1929, xciii., 749.

acid. It now appears that under treatment with liver the achlorhydria remains unchanged,[4] though the patient remains well as long as he continues the treatment. HURST [5] has insisted strongly upon the significance of the gastric defect in the causation of the disease. Although much has been written about the absence of hydrochloric acid in the stomach, no particular attention has been given to the possible significance of the lack of ferments accompanying the achlorhydria. Recently, however, the possible importance of the lack of ferments in the stomach of these patients has been brought into prominence by the work of Dr. WILLIAM B. CASTLE[6] of the Harvard Medical School. His observations on patients, carried out in collaboration with Dr. W. C. TOWNSEND, at the Thorndike Memorial Laboratory of the Boston City Hospital, may prove an important contribution to human gastric physiology as well as to the understanding of pernicious anæmia.

From the facts concerning the relationship of the achylia gastrica to the disease, and in view of the circumstance that the improvement of the blood appears to bear a definitely quantitative relationship to the amount of liver consumed, a simple conception of a deficiency mechanism for the causation of the disease was evolved by Dr. CASTLE. He supposed that the secretory defect might be responsible for the failure of a principle necessary for preventing Addisonian anæmia. Accordingly, he decided to test the effect of substituting for the presumably defective digestion in the stomach of the patient the normal gastric activity of a healthy man. This experiment appeared to be feasible, since MINOT and his co-workers had shown that the efficacy of liver extracts can be tested within a few days by estimation of the changes in the number of circulating immature red blood corpuscles (reticulocytes). From a study of some 30 cases of pernicious anæmia CASTLE and TOWNSEND, using this reticulocyte reaction as a criterion, showed that feeding with 200 g. of beef muscle daily for ten days had no effect on patients with pernicious anæmia. On the other hand, if this amount of beef muscle, representing a convenient source of protein, was first eaten by a normal person, recovered by induced vomiting at the end of an hour, and thereafter given daily by stomach-tube to patients with pernicious anæmia, the same improvement in their blood occurred as is regularly produced by somewhat smaller amounts of liver. A precisely similar effect was observed on giving to the anæmic patient 200 g. of beef muscle after incubation in vitro with 300 c.cm. of human gastric juice secreted by normal men following the subcutaneous injection of histamine. The daily administration by stomach-tube of 300 c.cm. of normal human gastric juice was, however, found to be without effect. Apparently a principle capable of acting like liver or kidney was evolved from the interaction of the two individually inert substances, beef muscle and normal human gastric juice, whether combined within the lumen of the stomach or in the incubator. The presence of the beef muscle in the stomach of the patient with pernicious anæmia could apparently produce none of the effective principle; but either within the stomach of the normal man or with normal gastric juice in vitro this substance could be formed. Furthermore, it was found possible to produce the effective substance in the presence of normal gastric juice from beef muscle proteins free from fat and carbohydrate. This, however, could not be done if the gastric juice had previously been heated sufficiently to destroy its enzyme activity, or, curiously enough, if active commercial pepsin (in the presence of hydrochloric acid) instead of normal human gastric juice was used. It is clear, therefore, that hydrochloric acid alone is not responsible for the production of the effects observed.

If, then, the normal stomach can produce from beef muscle a substance effective in relieving the anæmia, it is reasonable to suppose that it could produce this substance in sufficient quantity to prevent the appearance of the disease in the normal individual. On the other hand, the defective stomach of the patient with achylia gastrica might, through a failure to produce this substance, permit the disease to develop. Such are the conclusions drawn by the experimenters, who believe their observations to suggest that the preventive process in the normal stomach is of the nature of an enzyme action upon protein in an acid medium. An obvious objection to the hypothesis is the fact that persistent achlorhydria is stated to occur in individuals who show no other features of pernicious anæmia. Many of these cases, however, can be shown to have only a temporary or an incomplete lack of hydrochloric acid, whereas the reduction of the acid of the stomach contents in the case of Addisonian pernicious anæmia is usually profound, as is also the deficiency of ferments. If CASTLE and TOWNSEND'S observations are substantiated a considerable simplification of the problem will have been achieved, and it will then become possible to focus attention on the causes leading to the gastric defect.

[4] Johansen, A. H.: Ibid., 1929, xcii., 1728.
[5] Hurst, A. F.: THE LANCET, 1923, i., 111.
[6] Castle, W. B., and Locke, E. A.: Jour. Clin. Investigation, 1928, vi., 2; Castle, W. B.: Proc. Roy. Soc. Med., 1929, xxii., 58.

CHRONIC NEPHRITIS AND LEAD POISONING.

MEDICAL practitioners in Brisbane and other parts of Queensland have long held that chronic nephritis terminating fatally in uræmia is more prevalent in that State of the Australian Commonwealth than it is in other parts of the world. That this clinical impression has a strong basis of fact is proved by the statistical study recently published by D. GIFFORD CROLL,[1] who shows that in the ten-year period 1917 to 1926, 1309 persons died of chronic nephritis in Queensland before the age of 40, whereas in the other three States the average number was only 425. Closer analysis of the figures from which these statistics were derived supports the belief that an unknown cause, non-existent or not operative in the other States, was responsible for this strangely high mortality. His paper is followed by a thoughtful contribution by L. J. J. NYE, who endeavours to explain the facts and by close inquiry and reasoning, which is a priori beyond criticism, reaches the conclusion that these cases of nephritis are a late result of lead poisoning in childhood.

The clinical characters of this chronic nephritis in young people appear to be a long hyperpiesis with cardiac hypertrophy and retinal changes in the late stages of the disease, albuminuric retinitis and "choked disc" being frequent. Chronic anæmia lassitude, and gastro-intestinal disturbance are prominent. Œdema is inconspicuous, and renal failure ending in uræmia is the usual conclusion. Examining the question of streptococcal infections in the State, NYE is unable to find any evidence of undue prevalence, and whilst searching for some other

[1] Med. Jour. Australia, 1929, ii., 144.

possible cause, he was struck by the fact that an important proportion of cases of chronic nephritis admitted to the Brisbane General Hospital gave a past history of treatment for lead poisoning. Closer inquiry amongst the group of nephritics without such a history revealed that many of them came from wooden houses where the paint was often dry and in a powdery condition, and that as children they had been devotees of thumb-sucking, nail-biting, or a local pastime which consists in licking the rain-drops from the veranda railings. The investigator then made special inquiry into the renal function of twelve children known to have suffered from lead poisoning, and although in most of these the plumbism had occurred from six to ten years previously, he was able to show that unsuspected chronic nephritis with elevation of blood pressure was present in all of them to a sinister degree.

Without accepting NYE'S conclusions as final until they have been confirmed in a still larger series of cases, it must be accepted that he has made out an excellent case for the consideration of public health authorities in all countries. The prevalence of wooden houses in Queensland and the tendency for paint to crumble and flake in the hot climate make lead poisoning easier than in many countries, but there is perhaps too strong a tendency in England to regard plumbism as a disease which has been practically abolished by modern regulations in the potteries and other dangerous industries. Cases of chronic nephritis in children occur sporadically, and diseases such as renal dwarfism remain unexplained. The incidence of cardiorenal disease in older people continues to a distressing degree, and NYE'S investigations should stimulate inquiry as to whether lead poisoning has been as fully eliminated as is generally imagined.

THE WELFARE OF THE BLIND.

THE League of Nations, in response to a request made by the British Government in 1927, has issued a report [1] on the provisions made by the various Governments of the world for the welfare of the blind. The report is based on a questionaire, replies to which were received from 26 Governments representing all the principal States of the world. A difficulty which appears at the outset of any such inquiry concerns the definition of blindness. Stone blindness, that is to say, lack of perception of light, is comparatively rare, and for practical purposes all countries include in their statistics those with some degree of vision. Many countries, including England, recognise two standards of vision, a higher one for children and a lower one for adults, the standard for children being based on educational needs, that for adults on capacity to use the eyes for work, or on a numerical standard of visual acuity supposed to correspond with this. These standards vary in different countries, and the report recognises that though useful as a guide they are quite unsuitable for rigid enforcement. No universal definition of blindness as a disability is either possible or desirable. This is a fact which of necessity makes accurate comparison between the statistics of blindness in the various countries fallacious. Taking the different categories of the blind with which the report deals, it appears that infantile blindness has been materially reduced owing to the systematic campaign conducted in most countries during the last 20 years against ophthalmia neonatorum. There are, however, still enough blind children under 5 years of age to make it desirable to have a definite policy for their care and welfare. In Switzerland efforts are directed to inform the parents of blind children how best to bring them up. Special nursery schools for these children exist in many countries, including England and Switzerland itself. These nursery or preparatory schools are nearly always in the hands of voluntary societies with or without State grants. With regard to children of school age, in many countries where compulsory education is the rule, blind children are exempted. It is only possible to provide special day schools for the blind in large cities, and apart from them schools for the blind must be residential. Among countries where compulsory education is extended to the blind their education is a subject apart, to which a great deal of attention has rightly been devoted. The leaving age in Great Britain is 16 years; in the United States and elsewhere it is higher, up to a limit of 21 years. The curriculum includes most subjects taught in ordinary schools, with the addition of Braille reading and writing. Various outdoor games are possible, including rowing, and physical culture takes a prominent place in the curriculum. Tests of intelligence are in use both in the United States and in Great Britain. It is important to make special provision for blind children who are also mentally defective. The cost of the education of the blind is borne in varying degrees by the State, public authorities, and voluntary societies. Teachers in blind schools, it is generally recognised, must be specially trained. In Austria and Great Britain they must pass a special examination. The problem of the weak-sighted, such as high myopes, is far from being solved. In Great Britain, the United States, and Canada a beginning has been made by myope or sight-saving schools or classes; for rural districts nothing has even been attempted.

Vocational training generally begins when the period of elementary education is over, but though facilities for this exist in most countries they are not as a rule compulsory. In Great Britain the Blind Persons Act of 1920 requires the local education authorities to secure adequate provision for the technical education of blind persons ordinarily resident in their area who are capable of being benefited by such education, and the statistics for 1927 show that only 1400 out of a total registered blind population of 46,000 had failed to obtain it when suitable. Occupations in which vocational training is given include music, piano-tuning, massage, basket-, brush-, mat-, and mattress-making, chair-caning, sewing and knitting, both hand and machine, poultry farming, gardening, and domestic science. Even when trained, the blind worker remains at an economic disadvantage compared with the sighted worker. Special workshops for the blind provide for a proportion of them, a system which has been most highly developed in Great Britain. Others are organised as home workers with outside help for the provision of materials and disposal of the products. In Germany the experiment is being made of bringing the blind into ordinary factories, setting them to work among sighted workers. In 1920 a Reich law was passed requiring employers to engage a certain percentage (usually 2 per cent.) of war-disabled men, and in 1923 all blind persons, whether war-disabled or not, were included

[1] League of Nations Publications. Health Organisation. III. 8. London: Constable and Co. 10*s.* 6*d.*

in this law. The success of this experiment is doubtful, but in a few branches of industry, such as clock-making and the production of small parts for electrical apparatus, it has been signally successful. Similar experiments have been made in England, where, of course, no compulsion exists, but there are several objections to the plan of allowing blind and sighted workers to compete with each other, even where that is possible. In ordinary industrial occupations the output of a blind worker is less than that of a competent sighted worker, by an amount variously estimated as 25 to 66 per cent., and in order that the former may earn a living wage additional payments known as "augmentation" are made to him in most countries, either from State or from voluntary funds. Numerically larger is the problem of the unemployable blind. In most countries it is dealt with by the poor-law organisation. In America the practice varies in the several States. In Great Britain, under the Blind Persons Act, the certified blind receive their old age pensions at the age of 50, and by the Local Government Act of 1929 the local authorities will have power to grant relief to poor blind persons under 50, apart from the poor-law. All these services involve a great expenditure. In England and Wales it was estimated to amount to £1,250,000 in 1924–25, of which £420,000 was contributed by voluntary societies and the balance partly by the State and partly by local authorities.

The sixtieth report of the National Institute for the Blind gives an encouraging summary of the position of the blind, so far as England is concerned. The work of the Institute is threefold: first, the organisation and allocation of charitable funds so as to avoid waste and overlapping; secondly, undertakings directly for the benefit of the blind—the publication of books and music in Braille type, the provision of homes for blind babies (the recent fire at Chorley Wood Sunshine House necessitated moving the children into Devon pending the rebuilding), the maintenance of various other schools, homes, and hostels—personal services to the blind, including the distribution of wireless sets; and thirdly, research into new openings for blind workers both in manual and non-manual occupations. Efforts are being made to increase the openings in those professions which a limited number of blind persons already practise. The Advisory Committee on the Welfare of the Blind is considering the question of promoting the further education of the adult blind by means of correspondence. Courses were organised by voluntary effort last year, and requests have been received for instruction in such subjects as English composition and literature, business correspondence, history, French, German, Latin, industrial history, and the theory of music. Such courses are likely to broaden the interest and outlook of blind persons in all phases of life and human activity. Those who are interested are asked to send in their names to the secretary of the voluntary association to which they are attached, or to their home visitor.

THE RADIUM COMMISSION.

AT a meeting of the Commission on Oct. 11th it was decided to allot the four-gramme bomb of radium to the authorities of the Westminster Hospital, subject to agreement on the conditions of the loan. This bomb has been secured by the National Radium Trust for a period of three months from Nov. 1st, with an option to purchase at the end of that time. The Commission's policy of selection is based on the principle of concentration of radium at a limited number of centres in Great Britain, to which patients will be brought for treatment. At the same time it is proposed to distribute under proper safeguards supplies of radium emanation, prepared under the direction of the Commission.

Annotations.

"Ne quid nimis."

A STATIONARY POPULATION.

"WE are," says Sir George Newman in his annual report for 1928, "almost within sight of a stationary population" and the press and the public seem at last to be taking notice of a prospect of which they have been assured for the last ten years by Prof. A. L. Bowley, Prof. Raymond Pearl, and other statisticians. The population of this country was about 9 millions in 1800, 18 millions in 1850, 32 millions in 1900, 36 millions in 1910, and 40 millions now. The increase during the nineteenth century was unprecedented; from about 5 millions in 1600 the number of the people slowly grew to some 6 millions in 1700, and we have every reason to suppose that we are now returning to the almost stationary condition of the seventeenth century. Elderly and middle-aged people to-day were brought up in an atmosphere of rapid increase and universal expansion derived from their own experience of what was going on around them and from the literature of the preceding generation. What was to them the obvious fact that there were yearly more and more people, that towns were ever growing larger, that more and more public buildings were needed necessarily coloured their whole outlook on life, and their attitude towards social questions which has been passed on to those who are at present young has much the same complexion. It will need something of a mental convulsion to realise in all its implications that no further considerable increase of population is to be anticipated, feared, or hoped for, as the case may be. And it is difficult to see quite plainly what the change will involve though it is obviously of extraordinary importance.

Sanitarians will be concerned with migrations of populations rather than with changes in total numbers. No one can foretell how far the urbanisation of rural people will continue. Towns maybe will stop growing altogether and town-planning schemes will stay in the cupboard. The speculative builder will grow cautious, perhaps not till over-building has produced a useful decline in house prices and rents. Generous schemes of water-supply, sewage disposal, and other public services will suffice. Above all, sanitary authorities will have a breathing space in which they can make their equipment more nearly perfect without the immanent nightmare of unmanageable growth.

But in one important respect the stationary population of the twentieth century will be very different from that of the seventeenth. Numbers rose little between 1600 and 1700 because the death-rate was so high; they will increase only slightly between 1929 and 2000 because the birth-rate is so low. The average expectation of life at birth has enormously increased and the population of 1950 will differ from that of 1750 by containing a much larger proportion of old people. It is not our concern at the moment to discuss the effect of this on industry, production, and consumption; its medical implications are enough. Man's body in Western Europe nowadays begins to decay somewhere about 35; his elastic tissue loses its elasticity, he tends to become generally fibrous, his aorta begins to die and dilate, the glomeruli of his kidney perish a few at a time, his functional defects are obvious if he tries to run. And there is no suggestion that in increasing the average length of life anything has been done towards extending life's maximum possible duration; death at the end of the natural span is postponed, not averted, and the human body is where it has always been since vital statistics were collected. It follows that medicine and surgery will, progressively more and more, have to conduct their operations on bodies which are more or less decayed and senile. It is estimated that one-fifth of the whole population will

soon be aged 55 years or over, which means that their bodies will have but an indifferent capacity of healing themselves and doing anything which involves cell growth. Medical men will spend more of their time in helping lame dogs over stiles; in its mercy civilisation is learning to put up fewer and fewer obstacles.

AYERZA'S SYNDROME.

THERE are two chief reasons or excuses for attaching a man's name to a particular disease or syndrome—one that he was the first to describe or called particular attention to it, the other that the use of a single name provides an escape from the use of a cumbersome phrase. These two reasons are often combined as they are in the case of Ayerza's disease (better called syndrome). Further, it often happens that a syndrome which appears clear-cut when first published is found to include a number of unrelated pathological conditions, and as time passes and additional similar or related cases are brought to light it becomes increasingly hard to define. At this stage, if it is to serve any useful purpose, its use should be limited to those cases which had escaped previous recognition or else to those which have distinguishing clinical or pathological features. The chief feature of the cases to which the term Ayerza's syndrome has been applied is a severe cyanosis developing secondarily to disease starting in the respiratory system. Associated with the disease of the lungs changes in the pulmonary arteries, atheroma, thrombosis, endarteritis, and hypertrophy of the right side of the heart were found.

Before Ayerza's teaching was made known by his students' publications it was recognised that many respiratory diseases, notably chronic bronchitis and emphysema, asthma, and tuberculosis might, and not infrequently did, terminate with severe cyanosis, following failure of a hypertrophied right heart and changes in the pulmonary arteries. It therefore seems unnecessary to introduce a new term for this familiar association. There remain, however, the rarer cases in which the primary lesion is in the pulmonary arteries themselves and for these a distinctive name might be advantageous. It is in drawing attention to this group of cases that Ayerza, his pupils, and subsequent writers have performed their chief service; the accounts of primary lung diseases, with secondary changes in pulmonary vessels, included in their papers have only obscured the value of their contributions. In 1926 Escudero, one of Ayerza's pupils, affirmed that there were two stages in the production of the syndrome: one bronchial, syphilitic bronchitis; and the other secondary to this, a degeneration of pulmonary arteries. This would limit the group to one in which the pathological basis consisted of syphilis of lung and either syphilitic inflammation or secondary degeneration of the pulmonary arteries. Arrillaga in 1913 had recognised the association with syphilis, but had only regarded it as playing the part of a sensitising adjuvant to chronic pulmonary disease such as chronic bronchitis and emphysema. Although it will differ markedly from the earlier conceptions and will be broader than that put forward by Escudero, it will be useful to suggest the limits of the syndrome as it is now emerging. In this sense it would be limited in its application to cases of severe cyanosis associated with diseases of the pulmonary arteries and right-sided cardiac hypertrophy in which primary lung and heart lesions can be excluded. In addition to the cyanosis, other signs of chronic venous engorgement and heart failure, such as dyspnœa, polycythæmia, œdema, and hæmoptysis, would contribute their quota to the clinical picture.

Of these primary diseases of the pulmonary artery only two kinds have been described so far, one due to primary atheroma with thrombosis, and the other syphilitic. Neither is common, and of the two so far reported the syphilitic cases have been twice as numerous as the atheromatous. It is possible that as the condition becomes better known other causes connected with such diseases as rheumatism or periarteritis nodosa may be added to them. As it is, taking the syphilitic and atheromatous together a sufficient number have been published to enable Dr. Dorothy Hare and Dr. Joan Ross to collect 23 cases to which they add another in the paper published on p. 806; whilst a further case not included in their list was contributed by Dr. Konstam to our last issue. It seems evident that cases are accumulating and are sufficiently distinctive and important to merit description and a label. Konstam evidently regards his as an example of Ayerza's syndrome; Hare and Ross, on the other hand, suggest that theirs is not. The two cases are nevertheless very similar. Each provided definite evidence of syphilis apart from the lesions in the lungs; each had a positive Wassermann reaction. The lesions in the smaller and the secondary atheroma in the larger pulmonary arteries, together with the fibrosis of the lungs and right heart hypertrophy, were so similar that although Prof. H. M. Turnbull (in Konstam's case) describes a more fibrotic and Dr. Ross a more cellular reaction they must be accepted as phases in the same process. Both cases would fit quite comfortably into the syndrome as defined above. Hare and Ross would probably, and quite legitimately, object that in the first descriptions of Ayerza's syndrome the chronic pulmonary disorders were regarded as primary and therefore we have not defined Ayerza's syndrome. As has already been explained, the chronic lesions of the lung with secondary pulmonary artery and cardiac changes are very numerous, many of them unrelated and were well known before Ayerza's teaching became public. The 23 cases collected by Hare and Ross, together with their own and that of Konstam, do form a definite group and are characterised by an equally clear clinical picture giving the necessary basis for a syndrome. Are we to call it Ayerza's when there are other authors who appear to have much stronger claims to the distinction of having it called after them? It would be easy to suggest alternative titles, but names creep insidiously into medical nosology and once established are very difficult to eradicate. Whether "Ayerza's syndrome" is so established or not it is impossible to say. In any case as first used it would be much better dropped, and if this is impossible it would, though illogical, be far better to confine its use to the only clear-cut syndrome which has emerged from the nebulous, ill-defined, and confused conceptions which first appeared.

AN ATTEMPT TO IMPROVE DOMESTIC DIET.

Mr. H. L. Mencken somewhere argues that American women provide shocking meals because they are too intelligent to bother about food. The Cattaraugus County Board of Health, on the other hand, attributes their shortcomings to ignorance, and in 1924 it appointed Miss R. M. Odell[1] as nutritionist in the hope that she would bring the findings of the laboratory and the clinician into daily life. An investigation into the food habits of the people was started by the study of school medical records and by a questionaire of representative homes. The latter inquiry was undertaken through the local groups of home bureau women (corresponding to our women's institutes) so as to obviate the natural resentment of the families to apparently impertinent questions from an outsider. Groups were selected from (1) professional workers, (2) town labourers, and (3) farmers, and their food intake was analysed for a week. Various groups were thus examined over a period of 12 months so as to avoid seasonal considerations, and it was found that in the rural districts there was a lack of green vegetables in the diet. The people were therefore stimulated into planting gardens, and

[1] Improving the Dietary Habits of a Rural Community. By Ruby M. Odell. Millbank Memorial Fund, New York.

demonstrations were given for the storage of vegetables for the winter.

Three types of activity were based on this survey—namely, consultative service to individuals, adult education, and a school health programme. The desirability of the teaching is suggested by a case referred to the nutritionist in which the food of the family was "fried pork three times a day, fried potatoes twice a day, bread, butter, and cake. No milk was used." Most of Miss Odell's time was taken up in group education, as doing more good in a short time. Mothers, women's clubs, and other local groups were gathered together by the public nurse, and health talks and advice were given to them. In addition, a number of short courses on dietetics were held for representative groups of rural women. All-day conferences were held with the nutrition worker, and the representatives returned to their districts and retailed the knowledge to their fellows. There were also courses for the teacher-training classes, and individual teachers were instructed in the art of preparing a hot dish daily to supplement the cold lunch brought by the children. At individual schools health games and talks to the children were instituted. "Follow-through" work was undertaken, and it was found that the family diets of the district had improved. An excellent method was devised in which local shopkeepers were asked about alterations in orders given before and after the period of nutritional education. One merchant stated that he sold a carload of cabbages each week, whereas previously it had taken him a month to dispose of the same amount. This is typical of the findings with the other 55 storekeepers questioned.

THE CULTIVATION OF CINCHONA BARK.

THE League of Nations has recently given wide publicity to the fact, shown in India many years ago, that the total alkaloids of cinchona, purified so far only as to exclude unpleasantly toxic constituents, are as effective weight for weight against malaria as is quinine. The logical conclusion is that to extract quinine and use it alone is a waste of time and money and a squandering of antimalarial resources. Dr. J. M. Cowan [1] writes that the average percentage yield in India from the various cinchona barks respectively of quinine and of the other alkaloids is as follows: *C. ledgeriana*, 5·49 and 3·03; *C. officinalis*, 2·93 and 2·07; and *C. succirubra*, 1·4 and 4·85. The appearance of Cowan's paper is opportune, for the hopes that in plasmochin an effective and safe substitute for quinine had been found have not been realised. It is generally agreed that plasmochin has little action except on gametocytes, and particularly on those of subtertian malaria, the well known crescents. Accordingly plasmochin is now being given more and more in the form of tablets of plasmochin compound which, it bears emphasis, contain quinine, enough indeed to have prompted the published report that they have produced cinchonism. Moreover, while plasmochin does not necessarily render a man harmless to his fellows, its risk to himself is definite. J. A. Sinton and W. Bird [2] pointed out more than a year ago that three deaths had occurred in less than 1000 reported cases, while instances of non-fatal poisoning have been of frequent occurrence, grave symptoms appearing without warning. There is thus a preponderant weight of opinion which holds that no one should take plasmochin who is not under close daily medical supervision. The drug cannot then take the place of quinine in mass treatment, cannot be sold to all comers as quinine is sold, and when given should be given with quinine, which remains the essential factor in any war against malaria. Cowan points out that it is estimated by Müller, of Cologne, that 800,000,000 persons suffer from malaria; by Ronald Ross that 2,000,000 of them die yearly; and by Andrew Balfour that the annual loss which malaria inflicts on the British Empire is over £50,000,000. Clearly a problem of this immensity can be attacked only by the Governments of the peoples concerned. If proof were required of the need for State action it could be found in the fact that 40 years ago the fall in price of quinine crushed out of existence the many cinchona plantations which existed in India and Ceylon at that time. Nine-tenths of the world's supply of bark comes from Java. The growers there are then in a position to distribute merely as much alkaloid as will keep the price profitably raised, so that the world shortage of quinine is really an expression of a general inability to pay the price asked, while had not the price been raised cultivation could not have been continued. This is clearly an instance where human life and the profit necessary for ordinary commercial production are in opposite scales. Although India produces a third only of the quinine she consumes, she is yet the most forward grower of cinchona within the Empire. Yet there must be other districts within the confines of the Empire (Cowan mentions Malaya, Tanganyika, and parts of India itself) where cinchona could be grown, for its cultivation is long past the experimental stage. Its requirements are certainly fastidious: a mean temperature of about 75° F., some shade, a rainfall of 75 to 180 in., an altitude of between 1000 to 5000 feet with likelihood of a poor percentage of alkaloids near the lower limits, and a terrain which has been covered with evergreen forest growing on a rich porous, well-drained soil overlying sloping granite or volcanic rock. The trees are finally uprooted after growing for ten years. They have, however, rendered the soil, at least temporarily, incapable of producing a satisfactory second crop; but investigation may show that fallowing in forest for 15 to 20 years between crops is unnecessary, since in Java scions of *C. ledgeriana* grafted on *C. succirubra* stock have permitted of replanting at a shorter interval. While then research must be continuous, Cowan's paper leaves little doubt that a coördinated, Empire-wide scheme for the planting of cinchona and the harvesting of its alkaloids is not merely forced on us by consideration for the Empire's tropical inhabitants, but will repay the cost many times over.

[1] Empire Forestry Jour., 1929, vol. viii., No. 1.
[2] Indian Jour. Med. Res., 1928, xvi., 159.

DRESSINGS AFTER VACCINATION.

THE attention focused on post-vaccinal encephalitis has been allowed to divert interest from a more practical question—namely, how is normal routine vaccination best performed? Now that the number of scarified areas has been reduced we are left with an outstanding difference of opinion about the proper dressing to apply. A popular commercial one consists of a celluloid box cover; bunion pads are also often used; and probably most medical men employ a piece of gauze with adhesive strapping. None of these is really satisfactory, and the practice of leaving the lesion uncovered, while theoretically making secondary implantation of the virus in undesirable sites more likely, has much to recommend it, at any rate, when there is any chance of infection by tetanus. Thus C. Armstrong [1] shows that 116 collected cases of post-vaccinal tetanus in the United States were all in persons treated by various forms of dressings, no less than 53 occurring when the celluloid box method had been used. Cases due to such causes as infected scarifiers were omitted from the series. He holds that the congestion, moisture, and relatively anaerobic conditions promoted by the dressing must encourage the growth of the tetanus spores. Their source is uncertain, for vaccine lymph has never been shown to contain them, and the possibility of blood-stream infection, though it certainly arises owing to the known presence of tetanus spores in the human intestine, is not very great. Experiments on rabbits and other

[1] Public Health Reports, 1929, xliv., 1871.

animals indicate the greater facility with which tetanus can be imposed on vaccinia when the lesions are covered with a dressing, and also when the virus is inserted by intradermal injection. Post-vaccinal tetanus is, of course, very rare in this country, but the problem of the appropriate dressing is none the less important, since severe "takes" are definitely stated to be more common when the lesions are covered. Armstrong, it may be noted, recommends vaccination by the "multiple pressure" method of J. P. Leake,[2] and holds that there should be no dressing, or at most only a loose sleeve.

ANOTHER ANÆSTHETIC FOR CHILDBIRTH.

BARBITURIC acid derivatives have been used as anæsthetics or analgesics in France, where somnifen (allyl-isopropyl barbiturate) has had a certain vogue, and in Germany, where Bumm introduced pernokton, a brom-propyl-phenyl barbiturate. Somnifen has been used both intravenously and intramuscularly in labour, but has been condemned by some as causing drowsiness in the child and extreme restlessness in the mother. The progress of labour was also held to be impaired. The latest drug of this kind to be employed is sodium iso-amylethyl barbiturate,[3] and after extensive trial on animals a hundred cases of labour have been conducted with its aid. It was given intramuscularly after an injection of morphine and scopolamine when uterine contractions were occurring at intervals of less than ten minutes. Later intravenous injections were given. It is stated that labour was rendered almost painless without any evidence of harm to the mother, that danger to the baby has not been proved, and that prompt and complete control of eclamptic convulsions is possible. The most serious objection to the use of sodium amytal was the difficulty in restraining patients who became very restless. The drug is rapid in action and has a wide range of safe dosage.

CAISSON DISEASE IN THE LIFFEY TUNNEL.

CAISSON disease is caused by liberation of nitrogen bubbles from the blood into the tissues when a tunnel worker or diver passes too quickly into the normal atmosphere from a zone of high pressure. It is usually avoided by allowing the workman to pass through a chamber or "lock" in which decompression takes place gradually, but Dr. F. J. O'Donnell [4] relates that no less than 25 of 69 men employed during 11 months at the tunnel face in the Liffey Tunnel at Dublin suffered from "bends," as the symptoms are commonly called. One of them developed organic paraplegia, due to nitrogenous bubbling and coalescence in the fatty and vascular structures in the lower dorsal spine, and three presented intractable joint and visceral pain unfitting them for further work of the kind. In ten cases severe disablement was avoided only by immediate recompression, and there were 11 cases of arthralgia, vertigo, headache, and cramp. From a study of this high morbidity and of the men who escaped it, Dr. O'Donnell has come to the conclusion that damp and cold greatly add to the risk of the disease; in a warm dry site, he says, no cases should occur with pressures up to 30 lb. per square inch, provided that decompression is gradual. He holds that shifts should be shorter, the longest period which should be passed in "air" being not more than three hours. Extra clothing and stimulant drinks should be available during and immediately after decompression, and workers should not quit the vicinity of the decompression lock till they have been free from all abnormal sensations for fully half an hour. Men with a systolic blood pressure of over 140 are unsuitable for training in work under high pressures and should be rejected as recruits, but individual susceptibility to "air" varies considerably and apparently cannot be foretold by any device, so that newcomers should be tested in an air-lock on the surface or given graduated shifts. A complaint of itchiness of the skin among seasoned and experienced workmen who feel no other ill-effects is a sign that they have been exposed as long as is advisable and they should be given a short rest.

[2] Ibid., 1927, xlii., 221; see also THE LANCET, 1927, i., 671.

[3] Robbins, A. R., McCallum, J. T. C., Mendenhall, A. M., and Zerfas, L. G.: Amer. Jour. Obst. and Gyn., Sept., 1929, p. 406; see also THE LANCET, Oct. 5th, p. 730.

[4] Irish Jour. Med. Sci., 1929, xlv., 618.

SMOKE ABATEMENT.

AT a conference recently held in Buxton a fusion took place of the societies known as Coal Smoke Abatement Society and the Smoke Abatement League of Great Britain, under the presidency of Dr. H. A. des Vœux. It had been recognised for many years that concentration of the work in one body was advisable in order to save duplication of effort and dissipation of energy. Certain difficulties which stood in the way have now been overcome and there is every hope that the formation of a National Smoke Abatement Society will secure the diminution of the clouds of smoke which are so evident to any traveller by train or road and especially by air. We trust that one of the first tasks undertaken by the Society will be to impress strongly on all sanitary authorities the importance of applying the by-laws which can now be made under the Smoke Abatement Act of 1926. We understand that of all the authorities in the country only between 70 and 80 have as yet applied to the Ministry of Health for sanction for by-laws, and of these many govern small and unimportant districts where the nuisance from smoke is little felt. The Smoke Abatement Act, although not drastic enough to satisfy enthusiasts, admits of progress in the right direction, and the Ministry has circulated to all authorities a model by-law which fixes the standard time for the permissible emission of black smoke as two minutes in half an hour. The wording of this model by-law is as follows:—

"Whereas Section 2 of the Public Health (Smoke Abatement) Act, 1926, provides that any local authority may make by-laws regulating the emission of smoke of such colour density or content as may be prescribed by the by-laws and that where such by-laws are in force the emission of smoke of the character so prescribed for such period as may be prescribed in the by-laws either from buildings generally to which the enactments relating to smoke nuisances apply or from any such classes of those buildings as may be so prescribed shall until the contrary is proved be presumed to be a nuisance:—

"The Mayor Aldermen and Burgesses of the Borough of X, acting by the Council (or, as the case may be, the Urban or Rural District Council of Y or Z) do by this by-law prescribe that the emission of black smoke for a period of two minutes in the aggregate within any continuous period of thirty minutes from any one chimney in a building other than a private dwelling-house shall until the contrary is proved be presumed to be a nuisance."

The advantage of such a by-law is that a sanitary authority can, through its inspector, go into a court of justice and give evidence that black smoke has been emitted for a period of two minutes in the aggregate in half an hour. This simple procedure can now be adopted by all sanitary authorities throughout the Kingdom, and if faithfully and determinedly followed should do much to mitigate the smoke nuisance of factory towns and districts. The knowledge that such power exists will doubtless educate owners of factories to a proper sense of their duties to other citizens, and it is hoped that few prosecutions will be necessary. The Ministry of Health has so far not allowed any by-law dealing with smoke other than black smoke. But although it is incontestable that atmospheric pollution is most intense where factories exist, a considerable proportion of smoke does come from domestic chimneys, and much work remains to be done in stimulating the demand for smokeless methods of heating the

home. This at present can only be a voluntary effort, for private dwelling houses are expressly exempted by all Acts so far passed by Parliament. In the 1926 Act permission is given to local authorities to unite with adjoining authorities to form statutory bodies for carrying out the provisions of the Act. Several such bodies have been formed. Two years ago, at the instigation of the Coal Smoke Abatement Society, 90 of the local authorities in and about London held a conference at the Guildhall which was addressed by Mr. Neville Chamberlain, the Minister of Health then in office. The conference appointed a committee to draw up recommendations to secure uniformity of administration of the Smoke Abatement Acts, and this committee on Oct. 15th brought its recommendations to the conference. Some of these recommendations were presented to the conference held in Buxton this month and have become an accepted part of the policy of the newly formed National Smoke Abatement Society.

GAS GANGRENE IN THE AMERICAN ARMY.

THERE were 2718 cases of gas gangrene, 1267 of them being fatal, among the 224,080 American soldiers wounded during the war on the Western front. This incidence of roughly one case of gas gangrene per cent. of the wounded, with a mortality-rate up to 50 per cent. of the cases, is consistent with the records of the British, French, and German medical services. The Americans on taking the field had the advantage of the considerable research already done by the other belligerents on the prevention of anaerobic infection. To counterbalance this, however, they found themselves for the most part fighting in a terrain which had been richly manured for centuries, and was thickly strewn with human and animal organic matter as a result of several years of intense stationary warfare. In Volume XII. of the archives of the Medical Department of the United States Army in the World War [1] a fully illustrated account of gas gangrene, as it affected the American army, is set out. It is interesting to compare the account of its pathology with that given in the first volume of the System of Bacteriology recently published by the Medical Research Council, which is also based largely on the experience gained during the war of this infection. In the American work gas gangrene is considered under two headings. First the virulent forms are described and subdivided into emphysematous, toxic-œdematous, mixed and putrefactive types. The illustrations provide a comprehensive atlas of the pathology and histology of these states. Secondly, an avirulent form is recognised and described, in which the infection tends to resemble in time a bronze-like erysipelas and has a good prognosis. The bacteriological descriptions are mostly concerned with the four anaerobes *B. welchii*, *Vibrion septique*, *B. œdematiens*, and *B. histolyticus*. *B. welchii* naturally receives most consideration. It is stated to be not a true parasite, but a saprophyte incapable of growth in healthy tissue, and able to thrive only if the body cells are first injured by some mechanical or chemical means. Its lesions are said to involve the muscles, the blood-vessels, and the subcutaneous connective tissues. On this point American views differ from those held in Great Britain, where the site of the local lesion is not regarded as of supreme importance. In a Medical Research Council report published in 1919 [2] it is suggested, as the outcome of experimental infections, that the localisation of the infection in muscle is purely an accidental phenomenon, since the organism does not grow more readily in muscle than elsewhere. On the other hand, the importance of septicæmia with visceral dissemination is emphasised. Two small matters emerging from the American survey are at least of retrospective interest. The first concerns "laudable pus" which military surgeons in former times greeted with enthusiasm as of good prognostic significance; it is recorded that pyogenic organisms, with certain exceptions, though they might not alter the general outlook for the patient, yet tended to inhibit the growth of the gas gangrene organisms. The second concerns scabies. It was noticed that the burrow of the female provided an ideal and much-frequented culture tube for the anaerobes.

[1] Washington: U.S. Government Printing Office. 1929. Pp. 583. $3.60.

[2] Reports of the Committee upon Anaerobic Bacteria and Infections. Medical Research Council, Special Report Series No. 39. H.M. Stationery Office. 1919.

THE annual dinner of the Royal Society of Medicine will be held at the May Fair Hotel, Berkeley-square, London, W., on Thursday, Nov. 21st, at 7.30 for 8 P.M. The Prime Minister, the Minister of Health, and the French Ambassador have consented to be the Society's guests of honour.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XLVIII.

THE DIAGNOSIS OF GONORRHŒAL INFECTIONS IN THE MALE.

THE bacteriologist can give considerable help in the diagnosis of gonococcal infections in spite of the elusive tendencies of the gonococcus. It is proposed here to deal solely with microscopical and serological tests in the male.

Collection of Specimens.

The more important points in the collection of specimens deserve attention. First, in order to make sure that the pus is coming from the meatus and that the condition is not one simply of balanitis, all pus surrounding the meatus and preputial sac should be wiped away. Then the patient should be instructed to squeeze up the pus from the base of the urethra. The pus is collected on one or preferably two swabs (one for films and the other for cultures). If more than a few minutes is likely to elapse before the swabs reach the bacteriologist it is advisable to make a couple of films from one of the swabs straight away. If delay is unavoidable, it is important to see that the tubes into which the swabs are placed are properly corked to prevent drying up. A thinnish film of even consistency is to be aimed at, and some prefer to use a platinum loop for this procedure.

When cultures are desired it is preferable for the patient to attend the laboratory, for the material must be inoculated and incubated immediately. The gonococcus very soon dies out at room temperature. Cultures should always be made in medico-legal cases. Ordinary agar is useless for this purpose, and the best medium is hydrocele fluid agar.

Examination of the centrifuged deposit of urine is valuable in the later stages when the discharge has disappeared. The urine should be held for at least four hours and then passed direct into one or more sterile wide-mouthed bottles, care being taken: (*a*) thoroughly to cleanse the meatus with spirit and allow it to dry off; (*b*) to cork the bottle immediately it is full; (*c*) to send the specimen to the laboratory for immediate examination. If the material is not examined at once contaminating organisms will probably multiply and obscure the result. Furthermore, pus cells if few in number are apt to disintegrate and become unrecognisable.

In collecting a specimen following prostatic massage the patient is instructed to retain his urine for three or four hours and the meatus is then cleansed with spirit. After this the prostate should be massaged and any secretion coming away from the meatus can be collected direct on to a slide, which is put aside to dry in the air. The patient then empties his bladder into two or three wide-mouthed sterile bottles. This washes out the secretions and any pus that may be present, and these are eventually recovered in the laboratory by means of the centrifuge.

It must be emphasised that the gonococcus in vitro is a delicate organism. For this reason specimens of urine and prostatic fluid sent to the laboratory for examination should be as fresh as possible. In the later stages of the disease when the gonococcus becomes more and more difficult to find, it is liable to appear only intermittently in the discharges and in urine. To overcome this difficulty provocative measures may be employed. A discharge may be deliberately provoked by irritation of the urethra. The following methods have been adopted for achieving this: the passage of an instrument; the instillation of silver nitrate into the posterior urethra; the use of a provocative injection of gonococcal vaccine, and hard physical exercise and alcohol.

Bacterial and Cellular Elements.

In the interpretation of reports on material sent at various stages of the disease it must be remembered that during the first few hours of the infection gonococci may be scanty in the discharge, but very soon they appear in large numbers and can be identified with considerable ease. It is not long, however, before secondary infection takes place, and it is a rule for one or more of the following organisms to appear with the gonococcus: staphylococcus (usually albus), diphtheroid bacilli, enterococcus, *B. coli*. These organisms are probably mildly pathogenic and help to keep up the infective process, for they are found in chronic cases when the presence of the gonococcus can no longer be established. *B. coli* is not so common as the rest, but when it does occur it may prove very resistant to treatment. The distinction between a secondary and a primary *B. coli* infection can only be made by a study of the history in those cases where gonococci have not been found in the early stages.

Apart from bacteria in the pus, information of importance can be obtained from the cellular content. In the early days of an attack 90 per cent. or more of the cells are polymorphonuclears, the remaining 10 per cent. or so consisting chiefly of desquamated epithelial cells. This proportion lasts for a considerable time, and it is only when the infection is approaching its termination that the percentage of epithelial cells rises and the polymorphonuclears disappear.

While there are still polymorphonuclears to be found in the centrifuged deposit of urine, treatment should be continued. It is by no means uncommon to receive a specimen of urine or a smear from an old chronic case, and the only information demanded is "? presence of gonococci." Cases of this sort make one suspect that too much importance is apt to be placed by some practitioners on the presence or absence of gonococci and not sufficient attention on the presence of pus cells and secondary organisms. It does not seem unreasonable to aim at getting the centrifuged deposit of urine entirely free from pus cells as well as from gonococci and secondary organisms after prostatic massage and the various provocative methods have been applied, but this standard of cure is admittedly a high one.

The Complement-fixation Test.

Within certain limits this test has value in the diagnosis of gonorrhœal infections, though its value and reliability cannot be compared to the Wassermann reaction in the diagnosis of syphilis. The test depends on the detection in the blood of a complement fixing antibody, and the chief limitation of the test with the technique at present employed is the low concentration of the antibody in the serum. Owing to this some cases of undoubted gonorrhœa give a negative test throughout. However, it is possible that in the future, with improved technique, this disadvantage may be overcome.

The importance of the test at present lies in its specificity. Of 100 specimens of bloods from people who gave no history of gonorrhœal infection which were tested in this laboratory a few years ago, only two gave anything approaching a positive result. These exceptions occurred in patients attending the V.D. clinic for syphilis, and so there is just a possibility that the histories given to us by the patient were not correct. A positive result, especially if it is supported by a possible history or clinical symptoms, can be taken as very strong evidence in favour of a gonococcal infection. The reaction does not usually become positive until the disease is approaching the chronic stage, and a positive result can only be expected in somewhere between 50 and 80 per cent. of cases. The highest percentage of positive reactions is to be found in cases with complications such as pyosalpinx, arthritis, iritis, and the chief value of the test lies in the diagnosis of the nature of these conditions. About 2 c.cm. of blood are required for the test, preferably obtained from a vein, owing to the importance of keeping it sterile. The test cannot be performed in blood contaminated with bacteria. It is important to note that the test has no value in cases which have received vaccine treatment.

Tests of Cure.

In some cases it is exceedingly difficult to decide whether a patient who has been suffering from a chronic gonococcal infection is cured or not. Before a decision is arrived at the patient should be tested on at least three different occasions, and only if negative results have been consistently obtained should he be considered free from infection. It is unwise ever to accept one negative report as conclusive evidence of cure, and two out of the three tests should have been made after the use of a provocative measure. The ideal aimed at in treatment is the complete disappearance of not only gonococci but also of pus cells from the secretions. Unfortunately, this ideal cannot always be achieved. Even after prolonged treatment the prostatic fluid and urine may still contain a certain amount of pus, and the question arises as to whether such a patient should still continue under treatment. Some authorities are willing to overlook the presence of a few pus cells in these cases and discharge the patient, whereas others are not prepared to go so far. The question is undoubtedly one of considerable difficulty, since the fear must always exist at the back of the practitioner's mind that gonococci are still present, although undiscovered by the pathologist. Certainly in some of these cases the inflammatory process is kept up partly owing to the irritation of the antiseptics employed and the condition may clear up on the cessation of treatment.

The complement-fixation test has proved to be of little value as a test of cure in gonorrhœa, and is seldom employed at the present day for this purpose. Various continental authorities have recommended the use of spermo culture, and have reported that it has frequently yielded positive results when other attempts to find gonococcus have been negative, but the majority of patients will object to the carrying out of this test, and it is seldom used in England.

A. B. ROSHER, M.R.C.S., D.P.H. Lond.,
Director of the Charing Cross Hospital Institute of Pathology.

THE WEIR HOSPITAL.—The report of this Balham hospital for 1928 shows that there were 633 in-patients and 19,627 out-patients, the figures including 10,106 casualties. The X ray department is to be enlarged as soon as means permit.

Special Articles.

THE RELATIONSHIP OF CORONER AND MEDICAL PROFESSION.

A Lecture delivered to Post-graduates, at the Manchester Royal Infirmary on Oct. 11th, 1929,

BY C. W. W. SURRIDGE,
H.M. CORONER FOR THE CITY OF MANCHESTER.

I SHOULD like at the outset to point out that the coroner is an independent official. He is not a police official, and within certain limitations he has a wide discretion and a heavy responsibility. He is not bound by the laws of evidence, although in criminal matters, in my opinion, he should strictly observe them. The practice and procedure varies amongst different coroners, and I am only speaking of my own practice and procedure.

A coroner can only act upon information. In all cases where a crime is concerned, or serious accident, he usually gets his information immediately from the police, but in a very large number of cases the police are not called in, and it is from the doctors that the coroner derives his information, or from the registrar, whose duty it is to scrutinise closely the doctor's certificates, and to refer them to the coroner if he is unable to accept them.

Obligation to Inform.

There is no statutory obligation upon a doctor to inform the coroner, though it is said to be his common law duty, as one of those about the deceased, to inform the coroner or his officer, or the police, where he has any reason to suppose an inquest may be necessary.

But although there is no statutory duty upon a doctor to inform the coroner, it is, in this city at any rate, an unwritten law of courtesy for the doctor to inform the coroner at the earliest possible moment of any case of his which calls for the coroner's intervention. If he disregards this courteous procedure, he not only ruffles the coroner, who is a very autocratic individual and capable of being extremely unpleasant on the telephone, but what is of more immediate concern to the doctor, he runs the risk of alienating the regard and possibly the future patronage of the family of the deceased. If the doctor contents himself with posting his certificate to the registrar, who, upon receipt of it, posts the appropriate form to the coroner, it is three days after the death before the coroner knows anything at all about it. It is very inconvenient and unpleasant for the relatives to be informed, perhaps on the eve of the funeral, that an inquest must be held.

The majority of doctors in this city fully realise the position, and are anxious to work in harmony with the coroner, but difficulties do arise through a doubt as to the circumstances under which a doctor should communicate with the coroner. This question is answered by reference to Section 3 (1) of the Coroners' Act, 1887, which enacts: "Where . . . . . there is reasonable cause to suspect that such person has died either a violent or unnatural death, or has died a sudden death of which the cause is unknown, or that such person has died in prison . . . . . the coroner shall . . . . ." in effect hold an inquest.

Violent or unnatural deaths include all cases where death is due to an accident of any kind—however trivial the original accident may have been. They also include deaths from all forms of poisoning, including not only acids and alkalis, but alcoholic or food poisoning, or death from industrial disease, or deaths from suicide.

Deaths under Anæsthetics.

To this cause of death I should like to call your special attention, because I believe that the practice which I adopt is not universal. For my part, I cannot see how such deaths under anæsthetics can come under the category of deaths from natural causes, and I therefore always hold inquests in such cases. In most cases it is true that the inquest is a pure formality, and I sympathise very sincerely with doctors who have to attend an inquest in cases where they have been called upon to give an anæsthetic to a patient where the chances of his surviving the operation were very remote, but I can assure them that in such cases not the slightest reflection is cast upon their skill.

I am convinced that the holding of an inquest is a great public safeguard, and that it is a good thing to satisfy people that everything has been properly carried out, and that all proper precautions have been taken, and that all known means of resuscitation were at hand and employed. In some cases—fortunately very few—I have found that my Inquiry has been fully justified, and it is only on such occasions that I have any adverse comment to make.

With regard to cases of accidents, I find that sometimes a doctor fails to report a death from a simple accident, and the excuse given for his omission is that he did not report it as no question of compensation was involved. Of course, that is an entirely erroneous impression. The coroner has to hold an inquest in every case where death has been caused or accelerated by an accident, quite apart from any question of compensation. Another mistaken impression is that it is not necessary to inform the coroner where death has occurred more than a year and a day after the accident. This impression springs from the fact that no person who has inflicted the injury can be convicted of murder or manslaughter if death ensues after the lapse of a year and a day from the injury, but the coroner is solely concerned with the question as to whether the injury has or has not caused or accelerated death.

Compensation Cases.

Cases where compensation may be involved demand especial care. I very frequently get cases where the doctor gives a certificate of death from some natural cause, but where the relatives mention to the registrar or to me that the deceased had an accident at his work some months ago, or has been working amongst lead or chemical fumes, and the question is raised whether the accident or the work upon which the deceased has been engaged has attributed to his death. In such cases I always hold an inquest if desired to do so by the relatives and order a post mortem examination. This does not mean that I distrust the diagnosis of the doctor, but the matter has to be fully investigated. If I were to refuse to hold an inquest and the case went for compensation the county court judge might want to know why no inquest had been held. Very often the doctor has never been informed of the accident or condition of work, and he should always make careful inquiries on these points, and where he has reason to believe that the relatives consider that the accident has contributed to the death, he should always report it to the coroner.

Cases of sudden death do not necessarily demand an inquest. Where the doctor has attended a patient for heart disease, for example, and death occurs suddenly, a doctor is quite in order in giving a certificate if he is satisfied that no other cause, such as accident or poison, has contributed to the death, but under the regulations contained in the last Registration Act, 1927, the registrar has to refer to the coroner all cases where the deceased has not been seen by the doctor after death, or within 14 days of death and in such cases it is a great convenience to all concerned if the doctor notifies the coroner at once. But informing the coroner does not relieve the doctor from his duty of issuing a certificate where the cause of death is diagnosed.

The Question of Fees.

The only payment authorised by statute is a fee for giving evidence at an inquest, or for making a post

mortem examination. No payment is made by me for any letter written to me by a doctor or any other communications. I want to emphasise the fact that I do not order a doctor to make a written report. The letters to which I allude are purely voluntary communications. In cases where I have to ask for information on the telephone, I am invariably assisted with the very greatest courtesy by the doctors in this city. If a doctor is in any doubt whatever about a case he should consult the coroner, for I am only too ready to assist them as they assist me. Content yourselves with stating the facts, and leave the responsibility to the coroner. Never try to evade an inquest. I have two golden rules. In all cases where the relatives desire an inquest I always hold one, and whenever any undue pressure is brought to bear upon me not to hold an inquest I always hold one. This practice I have found to be fully justified on many occasions.

It has never been my practice to call doctors unnecessarily—e.g., in simple cases of fall down stairs or burns, where I get evidence of the injuries from other sources, but in cases where compensation is involved I generally call the doctor, as the employers or insurance companies may desire to cross-examine the doctor through their counsel.

Evidence in Court.

On the question of giving evidence in court, perhaps I may be permitted to give you some hints.

(1) Always speak up, so that everyone may hear you. Do not act as if you were carrying on a private conversation with the coroner; remember that relatives have a right to hear what you say and an interest in your evidence.

(2) Make your language as simple and as untechnical as possible.

(3) Be as concise as you can, but at the same time be luminous.

(4) Formulate your opinion and conclusions with care, and do not allow yourself to be shaken by cross-examination. I do not mean by this that you can always be exact. Medicine is not an exact science, —e.g., you may say death was undoubtedly, in my opinion, caused or accelerated by the accident, or, in my opinion, the accident had no connexion with the cause of death, or you may say I am unable to say definitely whether death was caused or accelerated by the accident or not. But once you have made up your mind, hold your ground, and do not allow yourself to be shaken by cross-examination.

(5) Do not show any resentment at being cross-examined. Remember, it may be counsel's duty to try to weaken or negative your evidence. Content yourself with reiterating your conclusions or adding reasons for those conclusions.

THE PRACTITIONER'S EMPLOYEES.

THEIR POSITION UNDER NATIONAL INSURANCE.

MEDICAL and dental practitioners are often in doubt about the position of their employees under the various Acts which regulate national health insurance, contributory pensions, and unemployment insurance. An explanatory memorandum (317/X) has therefore been issued by the Ministry of Health and other departments concerned. The main facts may be summarised as follows:—

Health and Pensions Insurance.

Under the National Health Insurance Acts and the Widows', Orphans', and Old Age Contributory Pensions Act contributions have in general to be paid for everyone over 16 who is earning not more than £250 a year for whole-time service, and also for everyone whose employment is by way of manual labour. Thus, subject to what is said below, health and pensions contributions are payable for nurses, dispensers, secretaries and reception clerks, dental mechanics and apprentices, domestic servants, hall-porters, and chauffeurs.

The contributions for such persons must be paid for each week during which they are employed; and in any week when they have been employed in an insurable capacity by more than one employer, the first employer is responsible. These requirements are explained in detail in Pamphlet A, which may be had from the Health Insurance Departments of the Ministry of Health, Whitehall, S.W. 1.

Rate of Remuneration.—In arriving at the rate of remuneration of employees (other than manual workers) account should be taken of the value *to the employee* of any emoluments in kind, such as board or lodging, provided at the employer's expense. The cost to the employer, though often a useful guide, is not necessarily to be taken as the value of remuneration in kind. "The employer and the employed person," says the memorandum, "will usually be in a position to agree as to what should be taken as a fair money equivalent of the value of such emoluments to the employed person, and it is only in cases of special difficulty that reference need be made to the Insurance Department. Ordinarily, the value of board and lodging is assessed at about 35*s.* a week. In the case of part-time employment the equivalent remuneration for normal whole-time employment should be taken."

Manual Labour.—The question whether an employment is or is not by way of manual labour is only material where the pay exceeds £250 a year, as persons who receive less are insurable in any event. The question arises principally in the case of dental mechanics and chauffeurs.

A dental mechanic is employed by way of manual labour, notwithstanding that he supervises assistants in addition to engaging in the manipulative work involved in making dentures, plates, artificial teeth, crowns, &c. A decision of the Minister of Health to this effect has been upheld by Mr. Justice Roche in the High Court. On the other hand, a dentist's assistant who is engaged in the ordinary duties of a qualified dentist and who attends to patients in that capacity is regarded as employed otherwise than by way of manual labour. But where such an assistant also takes part in mechanical work, regard must be had to the main and substantial nature of his duties. If he is substantially employed as a dental mechanic he is a manual worker. In case of doubt reference should be made to the Insurance Department for a ruling.

A chauffeur who is required to clean the car and to effect running repairs, besides driving, is normally regarded as employed by way of manual labour, and is, therefore, compulsorily insurable irrespective of his remuneration.

*Unemployment Insurance.**

From the practitioner's point of view there are three main classes in which liability to unemployment insurance does not coincide with liability to insurance under the Health Insurance and Pensions Acts—viz., employment as a female professional nurse for the sick, employment in domestic service, and employment in agriculture (including horticulture).

Female nurses have been excepted from unemployment insurance since July, 1922. The exception does not, however, extend to dispensers, secretaries, or persons employed by doctors or dentists on such duties as to receive patients, make appointments, answer telephone messages, clean and sterilise instruments, clean and dust surgery fittings, mix cement, hand instruments, &c., to the dentist, or attend on anæsthetic cases, unless the attendant is a duly qualified nurse and employed as such.

Employment in domestic service is excepted from liability to insurance only where the employed person is not employed in a trade or business carried on for the purposes of gain. It has been held by Mr. Justice Roche in the High Court that a doctor is carrying on a business for the purpose of gain within the

* The requirements of the Unemployment Insurance Acts are, set out in detail in Leaflet U.I.L.4, which may be had from the Ministry of Labour or from any Employment Exchange or Branch Employment Office.

meaning of the Acts, and domestic servants employed in that business are therefore required to be insured. The judge decided that a chauffeur employed primarily to drive a doctor on his rounds, and a domestic servant employed by a doctor in a nursing home carried on by him in addition to his practice, were employed in the business of their respective employers. These decisions are held to cover in principle chauffeurs employed to drive or accompany doctors on their rounds, servants employed to attend upon the patients or staff in a nursing home, and servants employed at the surgeries of doctors or dentists to admit patients, make appointments, or otherwise in connexion with the employer's professional requirements.

Servants employed in doctors' or dentists' private residences solely in connexion with their employers' personal needs, and servants whose duties in connexion with their employers' business are confined to cleaning the surgery and admitting occasional patients, are not regarded as employed in the business and are not, therefore, required to be insured against unemployment. Servants employed by doctors or dentists in connexion partly with their employers' professional requirements and partly with the employers' personal needs should be regarded as insurable if their substantial employment is employment in the former capacity. It has been held by Mr. Justice Roche in the High Court that one-third is a substantial part of an employee's working hours.

Employment in agriculture—e.g., as a gardener, whether regular or jobbing—is totally excepted from unemployment insurance.

The Services.

ROYAL NAVAL MEDICAL SERVICES.

THE following appointments have been made: Surg. Lt.-comdr. G. S. Rutherford to *Calypso* and Surg. Lt. A. M. Lawrence-Smith to *Hermes*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. St. G. B. D. Gray to be Surg. Lt.-Comdr.
Proby. Surg. Lt. R. H. Enoch to be Surg. Lt.
Proby. Surg. Sub-Lt. K. E. L. Yuill to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. D. S. Buist, half-pay list, late R.A.M.C., retires on retd. pay on account of ill-health.
Capt. R. R. Evans to be Maj. (prov.).

TERRITORIAL ARMY.

W. G. Platt to be Lt.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. W. Parsons resigns his commission on appointment to a commission in the Royal Army Medical Corps.

INDIAN MEDICAL SERVICE.

Capt. (prov.) F. W. H. Caughey relinquishes his proby. appointment.

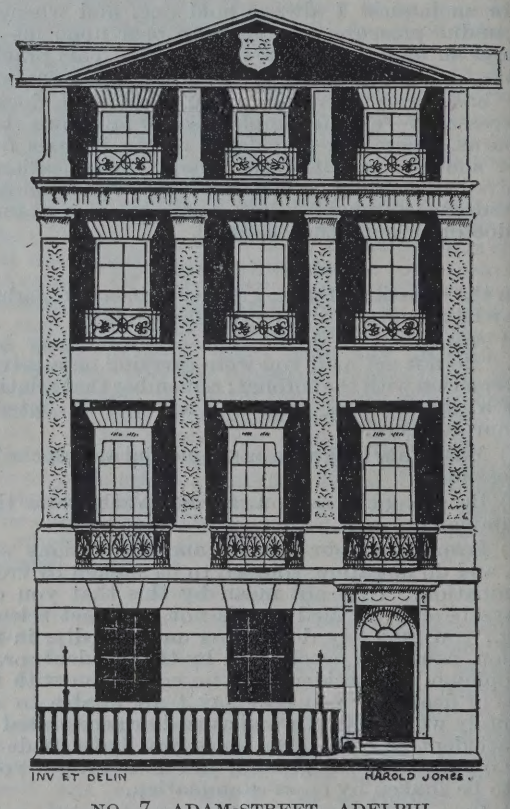
The undermentioned have vacated their appointments in India:—A.D.M.S.: Col. W. O'S. Murphy, I.M.S., A.D.M.S. (temp.): Maj. (Bt. Lt.-Col.) R. A. Bryden, R.A.M.C.

ELSIE INGLIS HOSPITAL, BELGRADE.—On Thursday last week Anne, Viscountess Cowdray, opened the hospital which has been erected in Belgrade in memory of Dr. Elsie Inglis, who went to Serbia during the war as Commissioner for the Scottish Women's Hospitals.

A CENTRAL ANÆSTHETISING PLANT AT ST. BARTHOLOMEW'S.—The basement of the new surgical block now being erected at St. Bartholomew's Hospital will be fitted with a central anæsthetising plant. Pipes from cylinders of hardened steel will carry oxygen and nitrous oxide to the various theatres where taps and a mixing chamber will facilitate the adjustment of the components. More than 20,000 gallons of gas are used in the hospital every week.

THE NEW HOME OF The Lancet.

IN the course of the next few days THE LANCE Offices will be transferred from 1, Bedford-stree and the adjoining house in the Strand, where our hom has been for the past 80 years, and more, to 7, Adan street, Adelphi, London, W.C., premises only 10 yards from the old address.

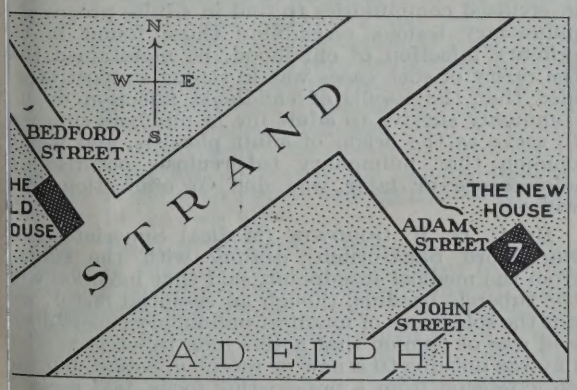


NO. 7, ADAM-STREET, ADELPHI.

During the past 105 years the editorial office THE LANCET has been in, or within a few yards the Strand, and in the immediate vicinity of the n address. Originally the paper was edited from house in Norfolk-street, Strand—a very differe street in appearance from the present Norfolk-stre Here Thomas Wakley, the Founder of the pap was engaged in private practice; here he was d covered by Sir Astley Cooper abstracting (Coo called it "pirating") the great man's lectures, wh were in course of delivery before the United Medi Schools of Guy's Hospital and the then adjace St. Thomas's Hospital. The business of the fi printer of the paper, G. L. Hutchinson, was carr on within a few paces, in the Strand. Dur the first 25 years of our existence the editorial w was done largely in Wakley's private house, but t printing office was changed several times, there bei as a matter of fact, no particular anxiety on the p of any firm to be even partly responsible for the is of a newspaper whose activities were being so oft and so expensively, discussed in the law courts. F in Bolt-court, Fleet-street, Wakley at last fou printers who for ten years acted as publishers, t firm being that of Mills, Jowett and Mills, of wh Jowett was the father of the famous Master of Ball In 1836 Wakley decided to become—probably v forced to become—personally responsible for publi ing, as well as editing, his paper, and this he

from an address in Essex-street, Strand. But six years later the firm of Churchill came upon the scene, providentially it appears, for Wakley was a reckless man of business, as well as much absorbed in Parliamentary affairs. A situation of pecuniary uneasiness was thus relieved, and five years later Wakley resolved to be again his own publisher. In 1847 the lease of the building at the corner of Bedford-street and the Strand, now being evacuated, was acquired, and in this building during the 82 years of tenure THE LANCET has been published. Until early in 1921 the paper was printed at these offices, as well as edited and published, and during that period considerable additions to the house were made, as well as many internal transformations carried out. But in 1920 the interests of Wakley and Son, Ltd., having passed into the hands of Messrs. Hodder and Stoughton, the composing rooms were done away with, and since 1921 Messrs. Hazell, Watson and Viney, Ltd., have been responsible for the printing.

The proprietors of THE LANCET have now purchased as a freehold 7, Adam-street, Adelphi, and the work of editing and publishing will be transferred there in the course of the next fortnight. The accompanying illustrations show the façade of our new home, and its situation in the famous quadrangle of symmetrical streets, erected on arches. This beautiful piece of building was designed and executed by John, Robert, James, and William Adam, on the site mainly of old Durham House, which had become a more or less derelict district of mud and slime, used only for the mooring of coal barges for the supply of a London and a Westminster which had then no existence beyond Hyde Park Corner. The streets in the Adelphi were named after the Christian names of the four brothers, though William-street has since been changed to Durham House-street. But to the bounding street on the east was given the name of Adam-street, while the beautiful pile facing the Thames received the name of Adelphi-terrace. It may require imagination to see the influence of Diocletian's famous palace at Spalato upon the architecture of the Adelphi, but Robert Adam, the most celebrated of the four brothers, made a careful study of that magnificent



pin, and has himself recorded that he did this designedly, when determining to apply classical models to modern dwellings; because the Emperor's large villa—it now constitutes the skeleton of nearly all the town of Split—was built as a residence, and was not a public institution such as usually formed a model for imitation or a source of suggestion. The whole enterprise of constructing the Adelphi was attended with difficulty. The elegant streets had to be constructed on arches for the securing of a foundation and of provision for wharfage on the Thames below, while obtaining a level access from the Strand. The expense incurred was huge, and was swollen by the legal opposition to the scheme from the Corporation of London, which body put forward proprietary claims to the foreshore. However, one private Bill in Parliament disposed of this matter, while another private Bill sanctioned the institution of a lottery for raising further funds, and finally the work was completed.

No. 7 Adam-street is the central feature of a line of houses in the eastern street, and faces down John-street. It was, 100 years ago, the town house of Mr. Christopher Smith, then Member of Parliament for St. Albans. It became, 20 years later, the home of the Evangelical Alliance, which was inaugurated in Liverpool in 1845. Sir Culling Eardley, one-time Member of Parliament for Pontefract, and the founder of the Evangelical Alliance, resided at 7, Adam-street in 1858. Under his direction the early activities of this body, designed to constitute a working union between Protestant peoples, while forwarding the cause of religious liberty, were fruitful. For the Alliance secured recognition of the Christian faith from the Sultan of Turkey and the Khedive of Egypt, the repeal of penal laws in Sweden against Roman Catholicism, and elsewhere liberal reforms in favour of Jews. Later the religious atmosphere of the house became very pronounced, for its walls sheltered, in addition to the Evangelical Alliance, missionary, educational, and charitable associations. For the next 25 years this character was retained, but our immediate predecessors in the house were, appropriately enough, considering the character of the structure, a firm of architects. The reconstruction was carried out under the direction of Mr. Graham R. Dawbarn, A.R.I.B.A.

An informal At Home was held on Wednesday evening, Oct. 16th, on the new premises.

MEDICINE AND THE LAW.

Doctors Fined under the Dangerous Drugs Acts.

THE maximum penalty for failing to comply with Regulation 2 of the Dangerous Drugs Consolidated Regulations in the matter of keeping a register and making the prescribed entries therein is 12 months' imprisonment, or a fine of £250, or both. Fines considerably smaller than the maximum have hitherto been inflicted, but magistrates are disposed to warn defendants that the offence will be seriously regarded in future. Earlier in the month two London doctors were ordered to pay fines of £20 and £10 respectively at Marlborough-street police-court, with 10 guineas costs in each case. It appeared that the police had been pursuing inquiries into a case where it was suspected that a man and woman were obtaining drugs otherwise than for their personal use, and were trafficking in them in an improper manner. A detective-inspector visited a number of chemists, and found prescriptions signed by the two doctors, against whom proceedings were taken. One of the two doctors, who had omitted to enter a certain quantity of heroin, attended at Scotland Yard and was shown certain prescriptions. He admitted that these were signed by himself, and that the contents of four of them were in the handwriting of the patients. He also admitted that ten orders for drugs obtained for professional use, though signed by himself, were in the handwriting of the man whose dealings the police were investigating as already stated, and that although the orders were marked "for professional purposes," the drugs were obtained for, and were sent direct to, this man. He further admitted that he had kept no official register; he produced a list of drugs given to the man and woman, but it was stated on behalf of the Director of Public Prosecutions that the list in no way complied with the Regulations. In this case the doctor, who pleaded that he was an anæsthetist, not in the habit of prescribing dangerous drugs and entirely ignorant of the Regulations, was fined £10. In the other case there were similar features, prescriptions having been signed by the medical practitioner and filled in by the patient, and no proper register having been kept. The doctor produced a memorandum pad containing entries in

pencil, but in this case, again, the prosecution contended that the document failed to comply with the Regulations, there being in particular no record of purchases. The defendant pleaded forgetfulness, due to overwork and ill-health, and added that the Act was difficult to interpret. The magistrate imposed a heavier fine in this case, on the ground that this defendant was aware of the need of keeping a register.

Members of the medical profession naturally find the meticulous compliance with the Dangerous Drugs Regulations a troublesome duty which, in moments of pressure, they may be inclined to postpone. The increased vigilance of the police in these matters brings irregularities to light sooner or later. It is not that the police invade the consulting-room at random in order to see if the Regulations are obeyed; it is rather that the police, in following up some allegation of improper traffic in drugs on the part of laymen, are obliged to trace the documents back to the source.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

ANNUAL CONFERENCE IN NEWCASTLE-UPON-TYNE, OCT. 10TH–12TH, 1929.

THE fifteenth annual conference of this Association was opened on Oct. 10th by the Lord Mayor (Councillor A. W. LAMBERT, M.C.), who welcomed the delegates on behalf of the city of Newcastle. Over 350 delegates attended including more than 200 members of the medical profession. We report the four chief sessions.

A Sociological Survey.

Under the chairmanship of Sir ROBERT PHILIP (Vice-Chairman of the Council) the first paper was read by Mr. HENRY A. MESS, Ph.D. (Director of the Tyneside Council of Social Research), entitled Tuberculosis on Tyneside. Dr. Mess said that a survey of social conditions in 13 industrial towns on Tyneside had been undertaken during the years 1925–28, and it had been found that with the exception of two middle-class "dormitories," all the towns had death-rates from pulmonary tuberculosis for the quinquennium 1921–25 considerably in excess of the national death-rate; in respect of non-pulmonary tuberculosis the figures were even worse. Overcrowding existed in the houses of Northumberland and Durham to an extent unparalleled in England and Wales, and this coincided, except in the mining districts, with the excessive death-rate from tuberculosis. The overcrowding was not only within the homes; in addition there was overcrowding of houses on the land resulting in an unusually large outpouring of domestic smoke, with depletion of sunlight together with the impossibility of effective isolation of diseased individuals. The local industries, shipbuilding and ship repairing, were very subject to violent fluctuations—livelihood was therefore uncertain and often scanty, leading to worry and malnutrition, which predispose to the disease.

Discussion was opened by Councillor JOHN BARKER (Chairman of the Tuberculosis Committee, Newcastle-upon-Tyne) who dealt with the local situation and the facilities provided for handling the problem, and made special reference to Newcastle's position. He warned local authorities against building types of low-rented houses which would in 20 years' time present another slum problem, suggested that the National Association should press the Ministry of Health for stricter obligation on local authorities to provide adequate tuberculosis dispensaries, educational agencies, and institutional segregation, and recommended the setting up of regional advisory councils.—Dr. H. KERR (M.O.H., Newcastle) paid a tribute to Dr. Mess's work locally, and said that it had aroused the tuberculosis conscience of Tyneside.—Dr. R. VEITCH CLARK (M.O.H., Manchester) stated that while there must be earlier and more complete notification of all cases occurring, there should be assurance that something would be done for the persons notified.—Councillor GRIFFITHS (West Riding of Yorkshire) said that Dr. Mess's figures only applied to the years 1921–25, and that since 1926 the mining population were suffering from tuberculosis more than ever owing to malnutrition, unemployment, and low wages.—In reply to the last speaker, Dr. S. G. MOORE (M.O.H., Huddersfield) pointed out that while privation and poverty play an essential part in tuberculosis as well as other diseases, the children of the rich also suffer and die from the fell disease.

The Factors that Produce Adult Pulmonary Tuberculosis.

Dr. EDOUARD RIST (Paris), in introducing the subject, said that the old traditional idea that consumption was due to some mysterious constitutional or hereditary predisposition must be abandoned. In civilised communities the adult was not, like the infant, virgin soil for the tubercle bacillus—disease in the adult was not the result of a first infection. Infection occurred in childhood, leaving the subject healthy and immune for years until, under the stress of adverse conditions, he more or less suddenly fell a victim to the disease. Physical vigour in itself did not protect against tuberculosis; the intensive training of the pugilist offered no guarantee against the disease. While a rational and well-ordered, well-regulated mode of living would undoubtedly reduce the liability to infection, it must be admitted that the actual causes of a breakdown were largely obscure; only a few factors were more or less definitely known or suspected, and it was left to the coming generation to discover those of which we were to-day utterly ignorant.

Dr. A. F. BERNARD SHAW (College of Medicine, Newcastle-upon-Tyne) followed with a contribution from the pathological side. His paper dealt with the value of the experimental method and the phenomena of virulence, resistance, and allergy in the study of tuberculosis. Mentioning that it was extremely rare in civilised communities to find in adults progressive pulmonary lesions resembling those found in the primary infection of childhood, he maintained that the rarity of such cases was in strong support of the idea that the bacilli of childhood infection do not commonly survive to adult life in numbers sufficient to serve as the origin of adult phthisis, and was of opinion that pulmonary tuberculosis occurring in adolescence or later was due to reinfection from without.

Dr. C. G. R. GOODWIN (Medical Superintendent, Barrasford Sanatorium), dealing with the subject from the medical standpoint, said that infection with the tubercle bacillus, though an essential factor, was not the sole cause of manifest pulmonary tuberculosis, and was of opinion that active lung tubercle in adult life was not due to a new or recent infection, but was an extension from a pre-existing focus, laid down in childhood, and that this extension and spread were due to adverse environmental conditions in the home and/or prolonged chronic fatigue. To reduce the incidence of the disease, he advocated adequate separation of advanced cases from children, and improvement of the housing and social condition of the poor. Further, he advised that the public should be clearly taught, first, that those who give themselves no leisure were prone to develop a state of chronic fatigue with loss of weight and increased liability to tuberculosis; and, secondly, that when maintained loss of weight occurred medical advice should be sought.

Sir THOMAS OLIVER (Vice-Chancellor, Durham University) dealt with the industrial aspect of the disease and said that occupation might favour the development by locally predisposing the pulmonary soil for the reception of the bacillus and by reducing

the general resistance of the worker. Speaking of the relationship of pulmonary disease to dust inhaled at work, he instanced the decreased incidence of phthisis among steel-grinders as a result of improved methods of ventilation and changed methods of operating. He considered the granite industry at home and abroad, and directed special attention to the work of the South African Miners' Phthisis Medical Bureau. He also detailed some experiments conducted by himself which showed that the finest particles of dust did not absorb water, and expressed the opinion that those particles were the cause of silicosis where rock-drilling was accompanied by water sprinkling.

Instruction of the Public, the Tuberculous, and the Medical Student.

Dr. WILLIAM BRAND (Medical Commissioner to the Association) gave an address on a Scheme of National Propaganda Regarding Tuberculosis. Quoting the aphorism of the late Dr. Herman Biggs that "health is purchasable," Dr. Brand said that this was the case for propaganda in a nutshell provided we knew what to buy. It was incumbent upon those with specialised knowledge to share it with the public and instruct the masses in tuberculosis, its causes, prevention, and the general principles of treatment. Antituberculosis propaganda must not be intermittent, but should be constant and insistent. The subject should be approached through every possible channel—e.g., the schools, the Boy Scout movement, the press, and the medical and nursing professions—besides the official public health services.

Dr. A. H. MACPHERSON (Medical Superintendent, Burrow Hill Sanatorium Colony) read a paper on the Combined Treatment and Technical Education of Tuberculous Youths. The Burrow Hill Sanatorium Colony had been reorganised, he said, to provide combined treatment and technical training for youths between the ages of 14 and 19 years. Courses of training were given in gardening and clerical work. The cost, £2 10*s.* per week, was defrayed by the authority responsible for the patient's admission. Forty-six youths from various parts of the country were in residence and the results were very hopeful, but the success of the scheme depended largely upon the coöperation of the local care committees and their ability to find permanent employment for the trainees.—Dr. NOEL BARDSWELL (Medical Adviser to the London County Council) followed with a glowing account of the colony, its situation, surroundings and its work, and expressed the opinion that the patients should derive great and lasting benefit from residence in the institution.

Prof. THOMAS BEATTIE (Durham University), speaking of the Teaching of Tuberculosis to Undergraduates, deprecated the institution of special courses in tuberculosis, and expressed the fear that the general standard of medical education would suffer if more special subjects were included in the curriculum. He held that tuberculosis was so intimately connected with general medicine and surgery that teaching in it would be best imparted by the professors of these subjects supplemented by instruction gained in the bacteriological and pathological departments. He hoped that the present inadequate supply of clinical material would be increased when the poor-law hospitals were taken over by the local authorities.—Dr. FERGUS HEWAT (Edinburgh University) said that the teaching of tuberculosis to undergraduates was regarded as an essential part of the medical curriculum in all Scottish universities. Such teaching should be given in the final year of study.—Dr. JAMES CROCKET (Glasgow University) said that only two things had to be considered: (1) Was there the need? and (2) Was there the time? He maintained that the need and the time for special study of tuberculosis both existed, and outlined the course at Glasgow.—Dr. A. TRIMBLE (Belfast) thought that the teaching of tuberculosis was so necessary that it would pay the municipalities to subsidise a lectureship in every medical school.—Dr. M. DAVIDSON (Brompton Hospital) remarked upon the lack of clinical material for the teaching of pulmonary tuberculosis in the general hospitals and advocated closer coöperation between these and the poor-law hospitals.

Dr. W. H. DICKINSON (Newcastle-upon-Tyne) read a paper on the

Training of Tuberculosis Medical Officers.

After the usual house appointments, he advised a period of general practice, followed by a post in some department of the public health service other than tuberculosis, so that the prospective tuberculosis officer might be imbued with spirit and ideals of prevention. A junior appointment in a large sanatorium or special "chest" hospital should precede application for a post as assistant tuberculosis officer. Dr. Dickinson laid special stress upon the importance of post-graduate study in general medicine as well as tuberculosis and the recommendations of the Astor Committee regarding study leave were quoted.—Dr. J. D. LEIGH (Sunderland) said that special training in surgical tuberculosis was necessary, and pointed out that some hospitals contended that non-pulmonary tuberculosis should be prevented and treatment ought to be a direct charge on the municipalities.—Dr. F. J. H. COUTTS (Ministry of Health) emphasised the importance of the subject and paid a handsome tribute to the zeal and enthusiasm of the members of the tuberculosis service under difficult conditions.—Dr. J. CROCKET (Glasgow) said that the course of study for the D.P.H., as at present constituted, was not of much value to the tuberculosis officer. He suggested that the value would be enhanced if the examination could be modified to allow candidates to pass in special subjects—e.g., tuberculosis.—Dr. J. C. GILCHRIST (Welsh National Memorial, Cardiff) pointed out the value of contact with students to tuberculosis workers, and mentioned that the tuberculosis officers and sanatorium superintendents were recognised teachers in the University of Wales. He also alluded to the value of the quarterly meetings of the staff of the Welsh National Memorial Association, with clinical discussions and pathological demonstrations.

Dr. HARLEY WILLIAMS (Assistant Medical Commissioner, N.A.P.T.), in the course of an address on Methods of Local Propaganda Regarding Tuberculosis, said that it was only in recent years that propaganda had come to be regarded as a legitimate part of the campaign against disease. The greatest difficulty was the ignorance surrounding the question of tuberculosis, and he urged a great extension of the teaching of the subject to the lay public, especially through the medium of the schools.

The session concluded with an address on Dentistry in Relation to Tuberculosis by Dr. WILLIAM GUY (Edinburgh), in which he laid emphasis upon the importance of preventive measures before infection occurred, and upon the necessity of an efficient dental service at all sanatoriums, clinics, and dispensaries.

A HOSPITAL BANNER.—A banner made by the patients of Grangethorpe Ministry of Pensions Hospital in 1927, in memory of the 330 patients who have died within its walls, has been placed in St. James's Church, Birch-in-Rusholme, Lancashire, and dedicated by the Bishop of Middlesex. Grangethorpe, which was originally a military hospital, ceases to be a Ministry of Pensions institution at the end of the present month.

WEST BROMWICH GENERAL HOSPITAL.—The report of the medical committee for the year ended on June 30th last, signed by Dr. L. A. Dingley, the chairman, states that the 1533 in-patients formed a "record." The general death-rate was 4·3 per cent.; 2·3 per cent. died within 48 hours of admission. In the casualty department 10,171 cases were treated, and the medical staff urge the importance of replacing this building, which is out of date and unsuitable to the heavy demands upon it.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Nursing and Midwifery.

ADDRESSING the annual meeting of the Midlothian County Nursing Association, Dr. Parlane Kinloch, Chief Medical Officer of the Department of Health for Scotland, spoke of the need for a radical reorganisation of the training of nurses. At present any girl looking forward to making a comprehensive profession of nursing would be in a position of tutelage for ten years, including three or four years of general training, three years' experience of fevers, one year of maternity work, a year at mental diseases, and so on. The thing was ridiculous. He looked forward to the time when a woman going in for nursing would get a comprehensive training within four to five years. He aimed at the orientation of the county service of Scotland round the medical schools of Edinburgh, Glasgow, St. Andrews, and Dundee and Aberdeen. This would provide the utmost efficiency, with reasonable economy. A million and a half pounds a year were being spent on a national health insurance system that was breaking down at the vital point—where the person needed nursing and hospital treatment. In the women's wards of the general hospitals 75 per cent. were there to seek remedy from the results of the present state of midwifery practice in Scotland. These things could be put right by a proper system of prenatal service, which the local authorities were called upon to provide, and by a proper midwifery service; but it could only be done by a combination of the voluntary and official organisations. They had met the voluntary hospitals, and got them organised into regions. When they knew what the voluntary systems could do, they would say to the local authorities: "You fill up the gap." The same thing held as regards this great nursing service.

Highlands and Islands Medical Service.

The Secretary of State for Scotland has received Cabinet sanction to introduce a Bill to amend the Highlands and Islands Medical Service Act. Under this Act an annual expenditure of £42,000 was authorised, but after 15 years' experience it has been found that the sum is too small for the schemes already developed, and the annual total expended for the last few years has been over £60,000. The new Act will probably provide for a larger annual sum, and may contain some amendments indicated by experience. The medical service (including nursing) arranged under the Act is, at least in Great Britain, a unique experiment in so-called "State medical service." Its success is now recognised.

The Glasgow Mental Colony.

A considerable time ago the Glasgow District Board of Control decided to convert the house and grounds of Lennox Castle, Stirlingshire, into a colony for the care and treatment of mental defectives. The scheme is one of the largest ever undertaken by the Glasgow Board, which will now be able to classify their mental defectives in a much more satisfactory way. Lennox Castle will accommodate 1000 patients, and this will probably meet the needs of Glasgow and the west of Scotland for some years. Stone-Yetts, another large colony both for epileptics and mental defectives, which has been worked on modern lines under Dr. Chislett for many years, will now be available for other poor-law purposes. With the Gogar-Burn Institutions for Edinburgh and the east, Lennox Castle and Stone-Yetts in the west, and the Royal Institution at Larbert in the centre, Scotland is rapidly making up leeway in her provision for the selected feeble-minded and their permanent care.

The Young Offender.

Mr. Tom Johnston, Under Secretary of State for Scotland, at the annual meeting of the Glasgow Council of Juvenile Organisations, said that he thought there was great need for more careful examination into the causes and prevention of crime. The theory of public and legal vengeance was archaic. It got nowhere at all, and a deterrent theory was getting but a very short distance. It had been stated in America that nine-tenths of the criminals in prisons ought never to have been there. He had heard the chairman of the Glasgow Parish Council say that three-quarters of the unfortunates who reached the Council under the label of "mentally deficient" ought never to be there either. In view of such statements he thought it was time that they bestirred themselves municipally in an endeavour to prevent these institutions from being choked with boys and girls, young men and women, and also old men and old women, who ought never to have been allowed to drift that length.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Stresemann's Illness.

THE late Mr. Stresemann suffered from nephritis, which was discovered about six years ago. Notwithstanding the great strain of his political work, he felt comparatively well until he contracted pneumonia in 1926. After that his general health deteriorated and he nearly died of renal insufficiency in 1928. He recovered sufficiently to take up again the burden of his office as Foreign Minister, but attacks of cardiac weakness gradually developed and on his journeys to conferences abroad he had to be accompanied by his medical attendant. At the Hague Conference this summer, which was associated with an enormous amount of work and much excitement, his illness grew worse, and his foreign colleagues noticed a great change in his condition. After the Hague and Geneva Conferences he took a short holiday at Vitznau on the Lake of Lucerne. A few days before his death he returned to Berlin, where party troubles induced him to leave his bed against medical advice. He was not a very obedient patient and it was very difficult for his medical advisers to make him follow their prescriptions. He indulged in smoking and was not a total abstainer, contrary to dietetic rules. On the evening of Oct. 2nd he had a cerebral hæmorrhage with paralysis of the left side. His medical attendant, Prof. Zondek, and Prof. Kraus were called in, but he died six hours later without regaining consciousness.

Lead Poisoning as a Legacy of Gunshot Wounds.

Notwithstanding the enormous number of gunshot wounds received in the late war in which bullets or fragments of metal remained in the body, the number of cases of lead poisoning from this cause has been very small; in fact no more than eight seem to have been recorded. In the *Deutsche Zeitschrift für Chirurgie* Dr. Hage has lately described a new case in which the patient was a meat inspector who had been wounded in the war in German South-West Africa 22 years ago. In 1926 he complained of tremor of the fingers, headache, and colics, and gradually his complexion got the characteristic lead pallor, whilst a blue line developed on the gums and there was weakness of the extensor muscles. The presence of basophile erythrocytes and an increase of hæmatoporphyrin in the urine left no doubt of the diagnosis of lead poisoning, and by radiography it was ascertained that there were some splinters of metal in the femur. As the man had nothing to do with lead, the poisoning was evidently due to those splinters. Hage draws attention to the lapse of 20 years since the injury, and suggests that this time interval may explain why but few cases of lead poisoning have so far been noticed among men wounded in the late war.

Boycott of a Medical Man.

A medical man whose motor-car was damaged by a railway car claimed damages which according to the railway company were excessive. The company thereupon told its employees not to consult this doctor, and the works committee, under pressure from the company, also recommended workmen to go to other practitioners. The doctor accordingly brought an action for damages against the company and won the case. By an injunction the company was first restrained from boycotting the plaintiff and was then ordered to pay him damages for the loss of a part of his practice. In judgment the court described the behaviour of the company as highly immoral and a kind of revenge. If they regarded the doctor's claim as too high their remedy was to apply to the courts or settle the matter extra-judicially. The claim of the medical man having nothing to do with his professional skill, they were obliged to recover the damages done to him. This judgment will certainly meet with the approval of the profession in general, since boycott of medical men for reasons not connected with their profession has also been tried on other occasions, though not in such an open and silly way.

Occupational Diseases of Dentists.

Dr. Mosenthal, a Berlin orthopædist, recently read a paper on the occupational diseases of the dental profession. Among these may be mentioned wounds of the fingers by bites, with or without infection, and dermatoses caused by frequent washing of the hands with sublimate of mercury. By over-exertion of certain muscles used in dental work neuroses may be caused, whilst conditions such as genu valgum and genu varum may be produced by long hours of standing. The position of the dentist at the operation chair sometimes leads to scoliosis, and flat-foot may develop as a sequel to relaxation of the muscles and ligaments. Varicose veins are also very common. Mosenthal advises dentists to remain seated at their work, as many surgeons already do in performing operations, and he recommends for that purpose a rotary chair. Certain pauses in the work when the dentist should rest in a sitting position are necessary, and he must also see that he has adequate shoes.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Post-vaccinal Encephalitis.

THE European experience with post-vaccinal encephalitis is the subject of extended comment in the current *Annals of Internal Medicine*, which reflects the very general reluctance of American pathologists to believe that a pure vaccine virus can produce encephalitis. It is not long since Dr. Richard Thompson, of Columbia University (a Fellow in Medicine of the National Research Council), reported his failure to produce vaccinal encephalitis in rabbits with a testicular virus. With direct intracerebral injection attempts to adapt the virus by brain and brain passage, at seven day intervals, gave negative results. Alternating brain and testicular passage, as used originally by Levaditi, was no more successful. Thompson considered that a possible explanation of the discrepancy between his results and those of so many European workers might be in variations in the strain of virus employed; that some would produce encephalitis without difficulty, others only after adaptation, and still others not at all. He mentions also the theory of Camus that the vaccine virus may be contaminated by some unknown neurotropic virus. It is to this latter theory that the editorial above mentioned very definitely leans. May not the unknown virus be simply the normal virus of rabbit encephalitis carried over with rabbit lymph, and may it not produce encephalitis in susceptible human beings? Up to the present four cases of post-vaccinal encephalitis have been reported in the United States. It is urged that, until the question of the ætiology of this disease is settled, the use of rabbit lymph in vaccination should be stopped.

A Healthy Summer in New York.

This summer has seen unusually healthy conditions in New York State. July saw two records broken: the infant mortality-rate of 43 per 1000 live births is the lowest July rate yet achieved, and represents a ratio of only 7·8 per cent. of all deaths; tuberculosis mortality (73·9) is also the lowest ever recorded in this month. The reported cases of tuberculosis show an increase of more than 400 over the corresponding month of last year, a striking example of improved diagnosis going hand in hand with falling mortality. The increase of 700 in the reports of syphilis is no doubt partly due to improved reporting, as well as to the fact that the venereal diseases, formerly reportable only by laboratories, have now been made reportable by physicians. Other changes made in the sanitary code relating to the reporting of disease are the dropping of erysipelas from the list of notifiable diseases and the addition of tularæmia and undulant fever. Five cases of undulant fever were reported during the month.

The Study of Morbidity.

Vital statisticians have for some years been pointing out that mortality statistics are a very poor index of the amount of sickness in a community. New York State has introduced a system of reporting sickness which already enables it to publish at regular intervals some very informing statistics. The U.S. Public Health Service is now projecting the establishment of a morbidity registration area, not only with the object of collecting important data for statistical manipulation, but also with the more immediate object of raising the standard of the reporting of notifiable diseases. As a basis for discussion it is suggested that the reporting of the following six diseases should be considered a basis for admission into the new registration area—viz., diphtheria, infantile paralysis, scarlet fever, small-pox, typhoid, and tuberculosis. The suggested minimum of efficiency which each State would have to reach before admission is 75 per cent. of all clinically recognised cases. The funds available to the public health service for this work at the present time are not large, and the success of the project will depend largely upon the coöperation accorded by the local units. If that is generously accorded it is hoped that the proposed registration area may be established by July of next year. In the meantime some valuable data are being correlated in the statistical division of the public health service from reports received from 35 different industrial sick benefit associations. One limitation of these industrial statistics is the absence from them of diseases for which benefits are commonly refused, including the venereal diseases and those which result from infractions of the law.

Phenol Wastes and the Water-supply.

The common practice in this country of adding chlorine to municipal water-supplies has given great importance to the elimination of phenol wastes on account of the fact that even small traces of phenol, when combined with a minimal quantity of free chlorine, will give to the water a most unpleasant taste. During the past five years a campaign has been conducted to exclude phenol wastes from the Ohio river. Although reliance has been placed upon education and persuasion unarmed by any legislative powers, the campaign has met with such success that to-day only four coke plants are discharging phenol wastes into the river in place of 17 such offenders in 1924. A careful record has been kept of the appearance of chloro-phenol tastes in the meantime, as well as of the flow of the river. There is a greater loss of concentration in the phenols as they pass down stream than can be accounted for by increasing dilution—the result, it may be, of biochemical oxidation.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1928 statistics of six towns:—

Name of town and estimated (R.-G.) population.	Birth rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Croydon C.B. (214,800)	15·7	11·0	0·96	1·52	1·5	1·9	53/20	28	3·9
Coventry C. (161,600*)	14·4	9·6	1·0	1·24	1·5	1·5	66/39	33	4·7
Derby C.B. (138,900)	19·3	10·9	0·93	1·28	1·1	1·7	60/30	26	7·5
Preston C.B. (127,100)	15·1	12·7	0·95	1·41	2·2	2·0	91/42	34	6·3
Northampton C.B. (94,070)	13·9	11·3	1·06	1·59	1·5	2·3	53/25	21	3·0
Paisley B. (88,140)	20·2	13·1	1·33	1·23	2·3	1·6	105/49	50	4·4

* The city was extended on April 1st. The above is a special estimate for statistical purposes. The mid-year estimate for the extended city was 168,134.

C. = City. C.B. = County Borough. B. = Burgh.

Croydon.

Dr. Oscar M. Holden describes Croydon as an originally residential town, which is gradually assuming an industrial character. The chief industries are iron foundries for bell-casting and engineering, and the London terminal aerodrome is within the borough. At the request of the Ministry, three members of the medical staff have performed duties at the aerodrome under the Aliens' Order, 1925. The cost of this service does not fall on the rates, and Dr. Holden points out that if the work is to be done properly a full-time medical officer will be required in the near future. Dr. Holden's experience hitherto has been in northern industrial towns, and he comments on the comparatively small figures of deaths due to respiratory diseases in towns like Croydon, but adds a word of warning that a rise in the death-rate from these diseases is likely to occur in south-eastern England owing to increasing urbanisation and industrialisation unless adequate steps are taken to prevent atmospheric pollution.

St. Mary's Hostel provided by the Croydon Mothers and Infants Welfare Association, has 17 beds for maternity cases, of which the corporation retain 15, in return for an annual grant of £1800. All cases, other than emergencies, have to pass through the municipal antenatal clinics. During 1928 the 314 admissions to the municipal beds included 11 emergencies; 193 cases had to be refused. Thanks to a legacy of £7500, aided by a municipal grant of £3000, this institution is to be extended by the erection of a modern maternity block of 32 beds, of which the corporation will rent 30. Dr. Holden mentions that the closer linking up of antenatal, natal, and postnatal activities is perhaps the most urgent matter for consideration in the maternity and child welfare scheme. One of the great lacks at present is suitable accommodation for mental deficiency cases, and the solution suggested is that Croydon should combine with other authorities to provide a large institution or colony.

From the school report we learn that ionisation and rheumatism clinics have been established. The former was opened in July under the charge of Dr. J. D. McLaggan. The cases dealt with, 48 in number, all had obstinate ear discharges. None had lasted less than six months, 1 six to twelve months, 4 one to two years, 14 two to five years, 11 over five years, and in 11 the duration was unknown. The results appear to be satisfactory so far, but no figures as to cures can be given as that implies at least six months freedom from discharge. The rheumatism clinic had a flying start on April 30th as for 18 months note had been made of suspects during routine school inspections. The full coöperation of parents and teachers has been obtained. There were 314 cases examined, of which 243 were classed as rheumatic. Interesting particulars are given of the incidence of the various rheumatic manifestations, family histories, and environmental conditions. There has been as yet no provision made for institutional treatment, but a few of the children were sent to West Wickham Heart Home.

Coventry.

Dr. E. H. Snell presents his thirty-second and farewell report, and appropriately includes in it a table giving the principal vital statistics of his first annual report for 1897 and of that for 1928. The comparison shows that the population has nearly trebled; the birth-rate has declined by 54 per cent., the death-rate by 43 per cent., infant mortality by 58 per cent., and the phthisis-rate by 23 per cent., while the mean age at death has gone up by 12·8 years. Among the advantages of Coventry, Dr. Snell enumerates a ring of commons on its borders, an almost non-existent smoke problem, a good average standard of living owing to regular employment, and the fact that two-thirds of the houses have been built in the last 30 years in accordance with modern by-laws. The insignificance of the smoke problem, he points out, is helped by the facts that practically all the works obtain their power from the electricity department, and by the large use of gas-stoves for heating and cooking. There are 40,000 gas-cookers and 14,000 gas-fires for slightly over 38,000 houses, and during the late coal stoppage there were less than 100 applications for coal permits on the ground of having no gas-cooker. Since 1916 practically nothing has been possible in the way of closing unfit houses. During the war the city was flooded with thousands of munition workers, and since the war there has been no alleviation in the great demand for houses, which is a long way from being satisfied. Some thousands of new houses could be let if they existed. Also a larger staff of sanitary inspectors is needed to deal with decay and dilapidation in the older property.

The recent extension of the city boundary raised its acreage by 4147 to 12,878 acres and the population of the added area at the middle of the year was 26,134. New problems have thereby arisen. Pig-keeping, except in such places as allotment gardens, was prohibited in the old city under a local Act of 1790, but pig-keeping in the rural added area has been an established custom from time immemorial. Other problems are polluted shallow wells and wooden shacks of all kinds used as houses. Again, there were only six cow-keepers in the old city supplying about 260 gallons per day, but the milk produced in the extended city is estimated at 1387 gallons per day. More than half the total quantity is delivered in bottles, the greater portion being pasteurised or sterilised. The question of institutional accommodation for mental defectives is a matter of growing importance. Owing to the generosity of the public to the organisations for the blind, the municipality only provides about a quarter of the amount expended in assisting unemployable blind persons. Progress has been made in the abattoir question. An ideal site has been approved close to the railway and to the cattle market, and it is proposed to erect a thoroughly up-to-date building, which will enable all the private slaughter-houses to be closed. Curiously enough the site, which is now approved, was under consideration 40 years ago for a similar purpose but on a much more limited scale.

The deaths from diphtheria show an increase recently. In 1926 there were 5, in 1927 21, and in 1928 42. The case fatality per cent. during these three years has been 5·2, 11·3, and 16·7. Immunisation has been recently adopted for the nursing and domestic staff of the hospital, and is being pushed at the welfare centres and in selected schools. The notifications of encephalitis lethargica numbered 8 and the deaths 11. There were 116 definitely known cases of small-pox. One 9-year-old girl, who had a very mild attack with other members of her family, developed acute primary pneumonia, which proved fatal, a few days after admission to hospital.

Derby.

Dr. Albert E. Brindley says the most unsatisfactory statistical fact is the increase in maternal mortality. The death-rate from puerperal sepsis alone was 3·0 per 1000 births. Antenatal work is only on a small scale as yet; the clinic was attended by 297 expectant mothers and the total births in the borough were 2679. Dr. Brindley objects to the term "filth-disease" being applied to small-pox, as it has affected some of the cleanest persons living in the cleanest houses in the town, and the use of the term may not only cause distress to sufferers but lead to concealment of cases. He mentions that counsel for one of the property owners at a recent improvement scheme inquiry tried to make a strong point of the fact that no small-pox had occurred in the area. There were 212 known cases of small-pox and no deaths during 1928. The corporation, in their 1929 Bill, are seeking powers to require information to be furnished under a penalty, when such information is deemed necessary for preventing the spread of small-pox and other infectious diseases.

In the recently added area 30 samples of well water from 28 wells were examined and only 3 were reported as fairly satisfactory for drinking purposes. The new houses erected during the year numbered 198, of which 63 were municipal. Pitiful applications continue to be received at the Health Office for municipal houses, and many cases of overcrowding come to the knowledge of the inspectors in visiting notified infectious diseases. During the year the corporation made a first attempt to deal with two slum areas. The first area comprised 120 houses with 482 occupants; the second 86 houses with 379 occupants. The intention was to rehouse the displaced tenants. The inquiry was held in October, but unfortunately, owing to legal difficulties, the efforts of the corporation have been, for the time being, at any rate, nullified. At the beginning of 1928 there were about 1700 objectionable tub or pail closets. These have now been practically all dealt with, the corporation paying a subsidy of £8 each for their conversion into water closets. Dr. Brindley again records the need for new premises for the health offices and for adequate and suitable accommodation for maternity and child welfare work.

Preston.

Dr. F. A. Sharpe points out that the main attack is no longer on the environment and that even the slum problem is a comparatively minor one in Preston, the chief aim being to see that a vast amount of rapidly ageing working-class property is maintained in reasonable condition. Work in the interest of the individual will receive, he says, a fresh inspiration and impulse from the Local Government Act of 1929. The care of the poor and their medical treatment will be in the hands of one authority, and there will be unification of public medical services and coördination of hospital treatment and of medical services for infants, mental defectives, and blind persons, opening out fresh fields of endeavour. At present the various departments are separately housed, and the outstanding need is the creation of a central office in which the administrative work of all branches can be organised and controlled.

The houses erected since 1911, numbering 3793, are more than sufficient to contain the natural increase of the population on the basis of 4·3 persons per house, which was the density at the 1921 census. Notwithstanding, bad housing conditions are to be found. When the corporation build houses they finish the roads, but this is not the case for private enterprise houses. The majority of persons who have bought "private" subsidy houses have stretched their resources to the utmost to do so, and many are not in a position to face the cost of road dedication, but in the absence of proper roads their property is bound to deteriorate. Less than 4 per cent. of the milk is produced in the borough. The biological examination of 257 bulk samples of milk showed that 28, or 10·9 per cent., were tuberculous. Dr. Sharpe shows that the present method of following up tuberculous milk samples is no incentive to the outside farmers to produce tubercle-free milk. One of the 28 tuberculous samples was from a farmer, who had already been twice dealt with. When his farm was visited in 1928 two tuberculous udders and one cow with advanced tuberculosis were found. These animals were obviously diseased and should have been notified under the Order.

The births in the borough numbered 1916 and the expectant mothers who attended the antenatal clinic were 341, of whom 85 were sent by midwives. An arrangement is now in force by which if a midwife-sent case has to be referred to hospital the midwife receives half her fee as compensation. Four midwives were so compensated during the year. A questionaire sent out during the year brought out much difference of opinion among medical practitioners and others as to whether prolonged industrial depression has affected the health of working-class mothers. The school report shows the need for the increase of the dental staff, and that the orthopædic scheme begun in the autumn of 1927 has done a satisfactory year's work.

Northampton.

Dr. Stephen Rowland reports that the chief interest has been centred in the small-pox outbreak which began in July, 1928, and is still in existence in the middle of 1929. During 1928 there were 82 cases with no deaths, and up to June, 1929, there had been altogether 450 cases. Dr. Rowland's experience suggests that vaccination confers immunity for at least 20 to 25 years, and that cases unrecognisable by their mildness may cause the disease in others in a much more severe form. Bacterial examination of the water-supply showed an unexplained increase in coliform organisms during the later months of the year. Dr. Rowland comments on the fact that it is quite common for persons suffering from active tuberculosis to marry. He cites one example, where a young married woman in the last stage rose from bed to attend the wedding of her sister, also suffering from active phthisis. The first-named died a few days after the wedding, her death being followed a few weeks later by that of her child from tuberculous meningitis. An X ray apparatus is needed at the dispensary for diagnosis and for the control of artificial pneumothorax. No attempt at the clearance of any large slum area has been possible. Of 24 houses condemned during 1928 14 were still occupied at the end of the year, owing to the lack of other accommodation. Dr. Rowland points out that when a closing order is made the tenants are in no hurry to leave as they are able to live rent-free.

Paisley.

Dr. G. V. T. McMichael describes a gallant fight against overwhelming odds. The proportion of one- and two-roomed houses is 63·4 per cent. A survey of 3083 of the oldest houses towards the end of the year showed that more than 25 per cent. were overcrowded, some of them being occupied by two or three times the number of persons they were fitted to accommodate. The average inclusive rent of a one-roomed house is 16*s.* per month, and of a

two-roomed 25*s*. per month, and many of the occupants are not in a position to pay much more. 362 of the houses inspected were only fit for demolition. After considering a report on these lines the burgh council decided to proceed with a scheme for 200 two-roomed houses to be let at rents which the lower paid working-classes can afford. Another difficulty confronting the health department is that the clinics are overcrowded, and that the medical staff is inadequate for the provision of the extra sessions needed. The child welfare centres are being used as out-patient departments, and in Dr. McMichael's opinion the only remedy is the extension of the insurance service to dependents. One of the bright spots is Barshaw Municipal Maternity Hospital, which provides ample accommodation for both antenatal and labour cases. More mothers need to be attracted to the antenatal clinics, and a separate postnatal clinic is required for them. More dental work is wanted especially among the pre-school children whose teeth are "in a deplorable state." The present arrangements do not attract female patients to the V.D. clinic, and Dr. McMichael suggests that an extra session should be provided in the evening. The provision of a joint county sanatorium for non-pulmonary tuberculosis and the substitution of an up-to-date isolation hospital on the outskirts for the old burgh fever hospital have been long awaited but are now apparently approaching realisation.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 5TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 97 (last week 108); scarlet fever, 2913; diphtheria, 1402; enteric fever, 83; pneumonia, 853; puerperal fever, 45; puerperal pyrexia, 107; cerebro-spinal fever, 2; acute poliomyelitis, 29; acute polio-encephalitis, 4; encephalitis lethargica, 15; dysentery, 25; ophthalmia neonatorum, 116. No case of cholera, plague, or typhus fever was notified during the week.

The notifications of small-pox this week, as three weeks ago, are again below the 100 level which has been maintained since September, 1928.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Oct. 7th–8th was as follows :—Small-pox, 141 under treatment, 4 under observation (last week 143 and 10 respectively); scarlet fever, 1999; diphtheria, 1969; enteric fever, 27; measles, 165; whooping-cough, 163; puerperal fever, 25 (plus 9 babies); encephalitis lethargica, 125; poliomyelitis, 6; "other diseases," 15. At St. Margaret's Hospital there were 18 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 13 (3) from measles, 4 (1) from scarlet fever, 30 (4) from whooping-cough, 34 (9) from diphtheria, 189 (41) from diarrhœa and enteritis under two years, and 32 (7) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa (the number of which has now reached its fastigium) 17 were reported from Birmingham, 15 from Hull, 11 from Liverpool, 9 from Middlesbrough, 7 each from Salford and Leeds, 6 each from Manchester and West Ham, while Glasgow, Dublin, and Belfast reported 9, 8, and 10 respectively.

The number of stillbirths notified during the week was 269 (corresponding to a rate of 43 per 1000 births), including 53 in London.

A NEW SUNDERLAND HOSPITAL.—A new Monkwearmouth and Southwick hospital to contain 120 beds is about to be built at Sunderland at a cost of about £95,000. Sir John Priestman, shipbuilder and chairman of the hospital, who has already given £5000 towards the building fund, has announced that he will give a further £10,000.

Correspondence.

"Audi alteram partem."

GENERAL MEDICAL COUNCIL.

ELECTION OF DIRECT REPRESENTATIVES FOR SCOTLAND.

To the Editor of THE LANCET.

SIR,—The Registered Practitioners of Scotland will shortly be called on to elect a Direct Representative to the General Medical Council, and we, the undersigned, have ascertained that Sir Norman Walker, who has served with so much acceptance as our Representative for over 20 years, is willing to submit himself again as a candidate.

We recall with satisfaction the record of valuable and responsible work which he has achieved as our Representative. That he is a valued member of the Council is shown by the many important positions he occupies, and the special Missions with which he has been entrusted. On the Council he is Chairman of the Business and of the Examination Committees, and a member of the Executive, Finance, and Penal Cases Committees. In 1927, on the invitation of the Government of India, he visited for the second time the Medical Colleges and Universities of that Country, and reported on the progress made since his first visit in 1922; and last year, on the invitation of the Council of Medical Education and Hospitals of the American Medical Association, he revisited the United States, delivered Addresses on Medical Education and on Medical Registration and Legislation in Great Britain and in the British Dominions, and took part in the deliberations of their Annual Conference.

As Chairman of the Examination Committee he had important duties in connexion with the last Official Inspection of the Final Examinations of all the Licensing Bodies in this Country in Medicine, Surgery, and Midwifery, and should he again be returned as our Representative, it is probable that these will be again entrusted to him in connexion with the new cycle of Inspection which begins next year. We therefore venture to suggest to our medical colleagues in Scotland that Sir Norman's candidature might well be afforded our hearty support at this election.—We are, Sir, yours faithfully,

C. E. DOUGLAS (St. Andrews).
P. T. HERRING (St. Andrews).
D. WATERSTON (St. Andrews).
D. E. DICKSON (Lochgelly).
J. MACDONALD (Cupar).
J. J. WILSON (Anstruther).
A. L. CURROR (Kirkcaldy).
J. LANGWILL (Kirkcaldy).
G. WILLIAMSON (Aberdeen).
J. MARNOCH (Aberdeen).
J. F. CHRISTIE (Aberdeen).
J. B. SIMPSON (Golspie).
J. MURRAY (Inverness).
D. LAING (Arbroath).
R. STIRLING (Perth).
T. K. MUNRO (Glasgow).
W. H. BROWN (Glasgow).
G. R. LIVINGSTON (Dumfries).
M. B. STEUART (Kirkcudbright).
J. P. BROWN (Campbeltown).
P. F. MACFARLAN (Stirling).
W. E. TELLET (Paisley).
W. F. BROWN (Ayr).
G. L. GULLAND (Edinburgh).
J. PLAYFAIR (Edinburgh).
R. THIN (Edinburgh).
H. J. STILES (Gullane).
D. INCH (Gorebridge).
P. J. HENDERSON (Galashiels).
R. C. LOW (Edinburgh).
R. S. MCKERRON (Aberdeen).
D. HUSKIE (Moffat).

MALIGNANT TUMOURS IN THE FOWL.

To the Editor of THE LANCET.

SIR,—I was much interested in the article on this subject by Dr. A. M. Begg and Dr. W. Cramer in your issue of Oct. 5th. My experience certainly supports the view of these workers that the production of fowl sarcomas of the type Rous No. 1 by embryo emulsion and chemicals, as reported by Carrel and other workers, owes its success to contamination by tumour material. I have made repeated attempts to produce tumours by the inoculation of fowls with embryo pulp and arsenious acid; in no case has a malignant tumour been produced by this means. In this laboratory we always keep a supply of a dozen

or so small sterile mortars for grinding up tissues, and all the apparatus used is sterilised by heat; this fact has, no doubt, accounted for the lack of success in the production of tumours with arsenic.

We have had, up to the present, probably about 2000 birds with experimental tumours, chiefly Rous sarcoma No. 1, through this laboratory, and on two occasions the tumour has appeared on birds which had not been inoculated experimentally. These birds developed tumours (Rous No. 1) on the head, and the infection could be attributed to inoculation by a peck, since they had been in a pen in which there was a bird with a superficial tumour which had become ulcerated and been pecked by other fowls.

Considering the ease with which a tumour can be produced by a minute quantity of material from a virulent sample of this sarcoma, it is rather surprising that there is so little evidence of infectivity in laboratories where considerable numbers of tumour-bearing fowls are housed. This absence of infectivity may perhaps be accounted for by the fact that the tumour material, either as a filtrate or in the form of small particles, loses its activity comparatively rapidly on exposure to air.—I am, Sir, yours faithfully,

S. L. BAKER.

Bland-Sutton Institute of Pathology, Middlesex Hospital, London, W., Oct. 8th, 1929.

ANAEROBIC TOXÆMIA IN ACUTE OBSTRUCTION.

To the Editor of THE LANCET.

SIR,—When the demonstration of Harvey, that the blood goes round and round, is recognised as being something more than an interesting phenomenon; when students of medicine really come to grasp that the flow of blood through the tissues matters to any part in question as to the individual as a whole: then, perhaps, medicine will begin to make that advance which is long overdue. At present, unhappily, such a circumstance seems to be completely disregarded. The effect of the interference to the blood-flow through the intestine—and thus through the portal vein and liver—in acute intestinal obstruction, caused on the one hand by the specific effect of the obstruction on the proximal part of the gut affected, and on the other by the effect of the straining, the tenesmus, and especially of the vomiting on the blood-flow through the whole gut and through the liver, is unconsidered by those concerning themselves with the genesis of the toxæmia arising in this state. Thus in your annotation of Oct. 5th (p. 724) no mention is made of this disturbance or of its possible effect.

No one who has had under his care a case of acute intestinal obstruction, who has watched the patient in the earlier part of the illness, has seen the operation, or inspected the patient subsequently during the recovery or at the post mortem, can have failed to recognise that in this disease physical forces are in predominant play. The disease is caused by a physical impediment; recovery depends on the removal of that cause, not on the administration of antitoxins. The reaction of the patient, his behaviour, during the illness prior to operation is one of constant and violent physical response; the patient does not lie quietly in bed, as though he were suffering simply from a rising toxæmia. He reacts greatly, constantly striving to empty the rectum, constantly straining to bring up the voluminous and ever-increasing contents of the stomach. And this goes on when the doctor is not there, all through the day and all through the night. But, according to writers on the subject, these factors do not matter, do not come into the account of a rising toxæmia, of a disturbance profoundly affecting the system, sufficing by themselves to cause exhaustion and death.

What we want is a lesson on "exhaustion" and its causes; what we want is to be taught the value—nay, the necessity—of sleep. It is plain we do not know yet the significance of either. In intestinal obstruction the student who has not yet his own reserves of observation to rely on has been taught, and perhaps is still taught, that the toxæmia of the patient—the cause, obviously, of the exhaustion and certainly of the death—is due to the rise of the *B. welchii* in the intestine; as though that mattered, as though when vital forces are ebbing the whole body does not tend to become or does not become invaded with micro-organisms. Is it not a tragedy to regard a complication as the primary cause of a disease? to use a hypodermic syringe when the only remedy is the knife? For such at least, though it may not be acted on, is the only logical conclusion of such instruction.

Some years ago I gave reasons for the view that the physical reaction of the patient plays an all-important part in the rise of the toxæmia, and showed how erroneous are the interpretations of some experimental data.[1] To the reasoning I there adduced comes now evidence to which you refer in your annotation. Certain authorities, it is stated, have repeated experiments purporting to show that the *B. welchii* or its toxins play a great part in the toxæmia, and have failed to find confirmatory evidence. Thus you declare that "... the original theory of intestinal absorption (of toxins) requires confirmation before it can be held to be established." The value of injecting antitoxins, you state, "has not so far been denied." My reply to that is that the value of such injections, either apart from operation or with it, has not yet been shown. If "the theoretical basis of the method, already resting on two contradictory arguments, is decidedly uncertain," I can only believe that the theoretical basis is unsound.

I am, Sir, yours faithfully,

R. H. PARAMORE, F.R.C.S. Eng.

Rugby, Oct. 5th, 1929.

THE HEALTH OF SEAMEN.

To the Editor of THE LANCET.

SIR,—The Seamen's National Insurance Society has a membership (as stated on p. 782 of your last issue) of 60,000, and its statistics will not be thought by anyone to be other than accurate. It occurs to me, however, that there is danger in concluding that the deaths and illnesses of all seamen are similar to those of the 60,000. There were 129,289 British seamen in the Board of Trade's quinquennial census, last taken on March 31st, 1926, and that makes no allowance for men on leave or waiting for ships, the 129,289 being the figure of men actually employed on that day, British seamen on British ships—twice as many as the number of members claimed by the Society.

I am, Sir, yours faithfully,

Oct. 14th, 1929. W. E. HOME.

PROBLEMS OF EPILEPSY.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to a leading article which appeared in THE LANCET for July 6th (p. 27), in which the present-day knowledge of epilepsy was ostensibly reviewed. I find it remarkable that no reference was there made to my theory that epileptic phenomena have their origin in a physiological phenomenon, a theory discussed fully in my book.[2] Although changes in the metabolic products of the body, both excreta and secreta, have been described over and over again in epileptics, subsequent work has always shown that such alterations in metabolic products occur in normal individuals, and do not stand in any direct relation to the epileptic discharges.

Even if theoretical points be waived, the deductions drawn from their consideration and presented in your leading article are, in my opinion, definitely dangerous. The contention that the administration of bromides to

[1] The Toxæmia of Acute Intestinal Obstruction: or Vomiting as a Pathological Force. Lewis and Co. 1923.

[2] Epilepsy. London: Baillière, Tindall and Cox, London, 1928.

epileptics is harmless, because the drug does not have the deleterious effect on them which it has on normal persons, is quite without proof. If we have learned one thing in the treatment of epilepsy, it is that the prescribing of bromides in cases of incipient epilepsy or where the epilepsy is but of short duration is to be avoided as long as possible. It is only when all efforts at controlling the fits by hygienic measures have failed that we are justified in assuming the serious responsibility of prescribing bromides.

I am fully convinced that it is highly dangerous to suggest that bromides can be administered freely to epileptics. Such statements tend to encourage practitioners to give bromides in early cases where the drug can do infinite harm to the patient.

I am, Sir, yours faithfully,

L. J. J. MUSKENS, F.R.S.M.

Amsterdam, October, 1929.

*** Dr. Muskens will recognise that it was impossible within the limits of a leading article to cover the whole field of epilepsy; his views received recognition in the review of his book which appeared in THE LANCET, 1928, i., 1284. The idea that bromide is harmful in mild cases of epilepsy is not accepted by clinicians in this country.—ED. L.

FORCEPS AND THE SIZE OF THE HEAD.

To the Editor of THE LANCET.

SIR,—In Mr. G. F. Gibberd's contribution to the study of the maternal death-rate (THE LANCET, Sept. 14th, p. 535) he refers to the increase during recent years of obstetric interference and he mentions that the forceps rate is now ten times what it was 60 years ago. I was recently informed by an elderly assistant in a large outfitting shop for boys that nowadays boys take a larger size in hats than they did when he was a young man. It would be interesting to know whether any general increase in the size of infants' heads has been observed. If so, this may be one of the causes of increased interference.

I am, Sir, yours faithfully,

F. S. D. HOGG.

Rickmansworth, Herts, Oct. 13th, 1929.

ANÆMIA IN SCHOOL-CHILDREN.

To the Editor of THE LANCET.

SIR,—In her report of an investigation of anæmia in school-children (THE LANCET, Sept. 14th, p. 550), Dr. Nancy Gibbs remarks on the discrepancy between the hæmoglobin percentages found by Dr. Helen Mackay and herself, after administering iron and ammonium citrate. I would suggest that the two inquiries are hardly comparable, as the ages of the children examined must have been different. Dr. Mackay's cases were mostly under one year of age, and on a milk diet, which does not contain enough iron to maintain a normal hæmoglobin level if the fœtal storage of iron has been defective or interrupted. These were true cases of iron deficiency or nutritional anæmia, and one would expect iron to cure the condition. On the other hand, Dr. Gibbs's cases were children of school age, presumably on a mixed diet, which should provide a sufficient ration of iron. The fact that additional iron did not, in most cases, cause an appreciable rise in the hæmoglobin percentage suggests that sufficient iron was already present, and that the anæmia in the child of school age is not a deficiency disease, but is probably due, as Pearson and Wylie suggest, to bad hygiene, bad teeth, insufficient sunlight, nervous strain, and the like. The fact that the children improved at the open-air school rather bears this out.

I am, Sir, yours faithfully,

FRANK BODMAN, M.B., M.R.C.S.,

Oct. 10th, 1929. Physician, Bruce Wills Memorial Hospital, Bristol.

SNAKE-BITE IN ENGLAND.

To the Editor of THE LANCET.

SIR,—" D. W. B.'s " letter in your issue of Oct. 5th (p. 744) reminds me of an early experience of my own. In the early spring of 1883, when a medical student at Bart.'s, I went with a fellow student to Epping Forest. At about 1 P.M. I saw what I took to be a slow-worm, and stooped to pick it up, and was bitten on my right forefinger tip. We caught the snake, which was an adder, and emptied its poison fangs. In about a quarter of an hour my finger began to swell in spite of sucking the wound and tying the finger tightly. Hurrying back to catch a train at 4 P.M. I felt very faint and had to sit down. I vomited and fainted in the train, and by the time we got to Bart.'s my right arm and forearm were swollen to twice their size. The following morning my right side was swollen to the crest of the ilium. I carried my arm in a sling for a week. Here there was no thrombosis, only exudation into the tissues. Presumably in " D. W. B.'s " case the inoculation was intravenous.

I am, Sir, yours faithfully,

Norwich, Oct. 8th, 1929. A. L. MARSHALL.

CERTIFICATION OF FITNESS FOR WORK.

To the Editor of THE LANCET.

SIR,—Many of the younger men in the profession are disgusted with the continual vilification of the certification of insurance practitioners. We have been roundly rated by everyone in contact with national health insurance work in the country—approved society officials, the press, and apparently all political parties. The statistics of certification are, of course, arrived at from the reports of regional medical officers (R.M.O.'s.) in England and Wales, and district medical officers (D.M.O.'s) in Scotland. This appears to be continued and intensive propaganda directed towards preparing the country for the establishment of a whole-time State service. In the area in which I practise the vast majority of the practitioners do not want a soft job in a whole-time service. They want freedom to carry on their work and to carve their own careers without that State interference which means the killing of all initiative and interest. We are getting rather tired of being lectured and treated like school-children. Two things we can do to clear ourselves:

(1) Put our own house in order.

(2) Work out the appeal service against the adverse findings of R.M.O. and D.M.O.

(1) It is common knowledge that the scallywag of the profession to-day is a canvasser, a high certifier, and possibly also a high prescriber. I understand that, in conjunction with the Ministry of Health, the Panel Conference, which meets in London on Oct. 24th, is to bring forward a scheme this month for dealing with high certification. If the canvasser is effectively dealt with a great deal can be done. The chairman of a recent Panel Conference declared that what could not be described otherwise than as wholesale canvassing was rampant in urban areas. Yet at the B.M.A. annual representative meeting this year a proposal by an urban division to hold disciplinary inquiries locally was lost by an overwhelming majority.

(2) At present there is virtually no appeal against the decision of the R.M.O. or D.M.O. The patient has no resources. He is dependent for everything on the society's weekly payment. D.M.O. says he is fit for work and his money stops. He can appeal, but how is he to live during the weeks or months his appeal is being considered? Naturally he asks for a line to get on the labour exchange, and his doctor as a rule is only too pleased to comply with the request. If one can persuade a patient to appeal what usually happens is this. He writes to his society intimating his desire to appeal. Sometimes his

letter is ignored. After some weeks he is told to appear before a lay person or official of another society. This person decides the appeal. If the patient is not bored to death with the whole proceeding, starving or dead, one may next in Scotland persuade him to appeal to the Department of Health. This entails filling up pages of official forms and further delay. I saw a woman this morning whose appeal is at this stage—three months less ten days since she was declared fit by the D.M.O.

I happened to meet a local magistrate the other day in connexion with an old age pension case. He was amazed at the way the profession submitted to the D.M.O.'s findings. He said "this man cannot always be right and the whole profession wrong." Recently I have tried to get every case of mine declared fit for work to appeal. Very few have been lost. There should be no reason why the patient should not be able to appeal practically immediately against the D.M.O.'s finding, and be medically examined by a board when he is in the same state of health.

The annual report of the Department of Health for Scotland states that in 1928 38,834 insured persons were sent for by D.M.O.'s for medical examination. It also states that there were only 31 appeals against the adverse finding of the D.M.O. These figures speak for themselves.

I am, Sir, yours faithfully,

ONE OF THE YOUNGER MEN.

Dundee, Oct. 14th, 1929.

BRITISH MEDICAL ASSOCIATION.

ANNUAL DINNER OF THE COUNCIL.

THE eighth annual Council dinner was held on Oct. 15th, the chair being taken by Dr. H. B. Brackenbury, Chairman of Council.

After the loyal toast had been honoured, "The Common Health" was proposed by Dr. E. H. Snell who observed that the present moment was an auspicious one for reviewing the subject, as the Registrar-General's Report—the standard account of the state of the public health—had just appeared. Most readers preferred detective stories to the parallel statistical columns in this Report, but the figures showed that the common health was highly satisfactory. With this achievement doctors had much to do, but voluntary teachers had played a part, although their usefulness might vary inversely as their perseverance. Dietetic faddists, medical and otherwise, offered constant advice on all subjects. It had recently been announced that drinking beer would entirely prevent cancer. The vegetarians said that, since the teeth of man resembled those of the monkey, both should eat the same food; it might, however, be the monkey which had made the mistake. Another helpful authority had recently announced in the press that there was enough poison in 20 cigarettes to kill a full-grown rabbit. This might be why a full-grown rabbit was seldom seen smoking cigarettes. The guides to the public in health matters should be the medical men who visited the homes of the people. The most important health measure that had been passed in our time was school inspection. To many people the pros and cons of any argument were settled by the reply, "It is interfering with nature." But we were interfering with nature every day. A campaign against maternal mortality would succeed only by interfering with nature, for nature's way of reproducing species was very wasteful, and she was impartially anxious about the increase in babies, beetles, bluebottles, and boa constrictors.

Mr. Arthur Greenwood, Minister of Health, replying to the toast, referred to the medical officers of health as outposts of the Ministry, engaged on a variant of the same work as the rest of the profession, and to himself as the common man, the man in the street. The interests of the man in the street were what the profession had to serve, and in so doing it worked for its own extinction. We had succeeded in diminishing infant mortality, stamping out certain diseases, and increasing the length of life. This was a tribute to the doctors and the public services. In the long run the interests of the doctors, the Government, and the man in the street were common. The eyes and ears of the public health service were found in the general practitioner who entered the homes of the people. The medical profession was fighting an uphill fight. The campaign against maternal mortality was not against nature, but against complications introduced by highly civilised life. He would like to see an organisation of resources so that all concerned should coöperate to protect what lay at the basis of all civilisation. There could be no civilisation with any kind of spiritual ideals except on a basis of sound physical health. The function of the medical profession transcended the individual, and had to do with the creation and maintenance of life. This country would never be in danger of becoming bureaucratic. A Ministry of Health run without regard to the medical profession would be cut off from all practical experience. The Minister of Health should represent the man in the street with whom the Ministry had to deal, but he could never dispense with the knowledge and experience of the doctors. Despite all the figures quoted by Dr. Snell, the health of the country was not worthy of an imperial race; it presented a tremendous and frightening problem. Since its inception the Ministry had had to devote its energies to questions that were only ancillary to the main problem: that of arousing the public health spirit. Tuberculosis could be stamped out in a generation with an enlightened public opinion. The people had not yet realised that prevention was better than cure; we had not broken the worship of the "bottle of medicine." The problem of public health was a problem of education.

Major Walter Elliot referred to the Brighter London scheme adumbrated by the First Commissioner for Works, and extended the idea of public sunbathing to Dr. Snell, Mr. Greenwood, and himself, as well as to other public men, recalling the classical example of Lady Godiva. He suggested that we took ourselves too seriously; most people disregarded the good advice given them, and got on very well. The great work for public health would have to be done in the future as in the past by the rank and file of the profession, in close coöperation with the civil service. We had to attend more and more to the normal man, woman, and child, and not concentrate on the abnormal.

Mr. W. McAdam Eccles proposed the toast of "Kindred Societies," including the Royal Society, the Royal Colleges, the Royal Society of Medicine, the Medical Society of London, the Medical Women's Federation, the Society of Apothecaries, the British Dental Association, the Pharmaceutical Society, the Royal Medico-Psychological Association, and the Royal College of Veterinary Science, as well as many ancillary kindred societies. To all these medicine owed much, as well as to her more distant relatives, for example, the accountants, the architects, the journalists, and the jurists.

Dr. Andrew Balfour, replying, attributed his position of representative of all these societies to his post as director of the London School of Hygiene and Tropical Medicine, the Benjamin of them all, and an institution which included in its staff members of all branches of the profession, and of all the kindred societies. Both the School and the Society owned new rooms in Bloomsbury; each had administrative rooms; each had a refectory. The School had a museum; the Association could found one if it were to display its correspondence files. The real kinship, however, lay

in aim and object: furtherance of the cause of science for the welfare of mankind.

Lord Riddell, also replying, expressed his anxiety at having to respond for so many societies, and had come to the conclusion that if he replied for one he would reply for all. After prolonged research he had concluded that no societies had done more to advance the cause of science, or the cause of dining and wining, than the societies represented there.

The health of the Chairman was proposed by Dr. R. L. Langdon-Down, who attributed Dr. Brackenbury's position to his loyalty to an abiding principle: that the welfare of the profession and of the public health were one and the same.

Dr. Brackenbury briefly replied.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH AND DIPLOMA IN HYGIENE.

Part II.—W. J. C. Auld, G. L. Chadha, Bessie G. Jemson, *A. P. Martin, R. M. Mathew, L. N. Mathur, Isabel D. Patterson, R. S. Sandhu, S. W. Savage, A. G. Shanks, and L. R. Sharma.

* With distinction.

UNIVERSITY OF DUBLIN.—At a recent examination the following candidates were successful:—

FINAL MEDICAL EXAMINATION.—PART I.

Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.—*G. F. Ennis, *G. A. Wray, *Brian O'Brien, *A .A. Cunningham, A. J. Harden, M. G. Leane, O. W. S. Fitzgerald, H. V. Tighe Marjorie L. Campbell, *A. D. Barber, *T. J. O'Sullivan, *Annie E. Thompson, A. D. Egan, J. A. Page, C. M. Elliott, T. H. Dockrell, R. D. Scott, and W. M. E. Anderson.

Passed on high marks.

SOCIETY OF APOTHECARIES.—On Oct. 8th the outgoing Master of this Society, Lieut.-Colonel C. T. Samman, was placed in office for a second term in recognition of his achievements in developing the work of the Guild. After a service at St. Andrew's-by-the-Wardrobe, the Master's dinner was held in the Society's hall in Water-lane, which has now been saved from the threatened destruction by the death-watch beetle. Dr. Thomas Wakefield proposed the Master's health, and in his response Colonel Samman spoke of the efforts being made to bring the Society into the forefront of medicine.

ROYAL SOCIETY OF MEDICINE: *Colyer Prize.*—In 1926 a prize was founded to commemorate the 25 years' service of Sir Frank Colyer as honorary curator of the Odontological Museum. It may be given every third year in recognition of original work in dental science completed during the previous five years by a dental surgeon educated in Great Britain or Northern Ireland who has not been qualified to practise more than five years at the date of the award. Applications for the first award should be submitted in due form not later than March 31st, 1932. The value of the prize will be about £35.

Particulars of the *annual dinner* will be found on p. 836.

ROYAL COLLEGE OF SURGEONS OF ENGLAND—A quarterly meeting of the Council was held on Oct. 10th, with Lord Moynihan, the President, in the chair. Membership of the College was conferred on:—

C. S. Kah, Cambridge and St. Thomas's; D. Sheehan, Manchester; P. D. B. Spence, Guy's; F. R. Stansfield, Leeds; E. H. Parkinson, Birmingham; and T. J. Millin, Dublin.

It was reported that, at the Primary Examination for the Fellowship held at Toronto in August last, the following candidates had been successful:—

J. H. Beasley, Toronto; J. M. Bruner, Johns Hopkins and Rush Medical Coll.; G. A. Fleet, McGill; F. L. Horsfall, McGill; H. D. Isaacs, Manitoba; R. Marnham, Camb., St. George's, and King's Coll.; H. J. Muth, Saskatchewan; L. R. Olver, Sydney and St. Bart.'s; and V. N. Shirodkar, Bombay and Middlesex.

It is proposed to hold a Primary Examination for the Fellowship at Montreal next year.—Mr. Hugh Lett was elected a member of the Committee of Management of the Conjoint Examining Board.

On the recommendation of the Board of Examiners in Dental Surgery it was decided that after July, 1930, candidates for the Licence in Dental Surgery be required to pass in elementary biology (Part II. of the pre-medical examination) as required of candidates for the M.R.C.S. and L.R.C.P. Not more than two terms' work in dental mechanics will be recognised before Part II. of the pre-medical examination is passed, and no instruction in anatomy and physiology will be recognised before the pre-medical examination has been completed—i.e., chemistry, physics and biology.—The University of Cairo, Dental Department, was added to the list of recognised Dental Schools at which the curriculum for the Licence in Dental Surgery may be taken.

Estimates for alterations and additions to the museum workrooms and laboratories were received and approved, and the architect was instructed to take steps for carrying out the work forthwith.—On the recommendation of the Library Committee it was decided to buy a new edition of the "Encyclopædia Britannica."—The annual report of the Council, to be presented to the Fellows and Members at the annual meeting on Nov. 21st, was approved.

The President reported that the Bradshaw lecture on a Review of the Surgery of the Gall-bladder and Bile-ducts would be delivered by Mr. R. P. Rowlands on Nov. 14th at 5 P.M.—The President reported that he had received from the Public Trustee a cheque for £10,000 for the legacy bequeathed to the College by Mrs. Eliza Macloghlin for scholarships to be founded in memory of her husband, the late Mr. E. P. P. Macloghlin, M.R.C.S. A committee was appointed for putting into operation the scheme for the award of the scholarships.—The President reported that he had received an offer from Lord Melchett of a gift of £500 a year for a period of seven years for a research scholarship in the College of Surgeons, and a resolution expressing grateful appreciation of Lord Melchett's liberality was adopted.

UNIVERSITY OF LONDON: *University College.*—A course of 49 post-graduate lectures in Biochemistry started this week and will continue throughout the session on Thursdays and Fridays at 4 P.M. Particulars may be had from the secretary of the College, Gower-street, W.C.1.

MEDICO-LEGAL SOCIETY.—A meeting of this Society will be held at 11, Chandos-street, Cavendish-square, W., on Thursday, Oct. 24th, at 8.30 P.M., when Lord Riddell will deliver a presidential address upon Ancient Laws and Modern Women.

The annual dinner of the Society has been fixed for Friday, Dec. 13th, at the Holborn Restaurant.

CHELSEA CLINICAL SOCIETY.—The annual dinner will take place at the Hotel Rembrandt, Thurloe-place, London, S.W., next Tuesday, Oct. 22nd, at 8 P.M. (reception at 7.30). Mr. A. Rugg-Gunn and Mr. H. P. Bayliss are the hon. secretaries.

HUNTERIAN SOCIETY.—This Society has invited members of the Medico-Legal Society to attend a discussion on the Doctor and the Motorist at 9 P.M. on Monday, Nov. 18th, at the Cutlers Hall, Warwick-lane, London, E.C.

NATIONAL COUNCIL FOR MENTAL HYGIENE.—As we have already announced, a conference on Mental Health will be held in the Central Hall, Westminster, from Wednesday, Oct. 30th, to Saturday, Nov. 2nd. Further information may be had from the secretary of the Council at 78, Chandos House, Palmer-street, London, S.W. 1.

GUILD OF ST. LUKE.—As we announced last week the Guild's annual service will be held in Westminster Abbey on Sunday next, Oct. 20th, at 6.30 P.M. The secretary is Dr. Andrew Currie, 20, Oxford-terrace, London, W. 2.

ROYAL ACADEMY OF MEDICINE IN IRELAND.—At the annual meeting of the Academy on Oct. 11th it was stated that the year had been one of unusual activity, the number of Fellows on the books and the attendance at meetings having increased. The chief event of the year was the Obstetrical and Gynæcological Congress held under the auspices of the Academy. The principal officers for the ensuing session are: President, Sir William Taylor; General Secretary and Treasurer, Dr. T. P. C. Kirkpatrick; Secretary for Foreign Correspondence, Mr. W. Doolin; Presidents of Sections: Medicine, Prof. R. J. Rowlette; Surgery, Mr. R. A. Stoney; Obstetrics, Dr. A. H. Davidson; Pathology, Dr. J. Lait; State Medicine, Dr. W. D. O'Kelly.

POST-GRADUATE WORK IN GLASGOW.—A programme including weekly demonstrations, and special courses in ophthalmology, obstetrics, and diseases of the ear, nose, and throat, has been arranged for the winter session, and particulars may be had from the secretary of the Post-Graduate Medical Association at the University. Clinical assistantships are available at various institutions.

WEST HARTLEPOOL ISOLATION HOSPITAL.—After long deliberation West Hartlepool Town Council has decided to erect an isolation hospital at a cost of £42,000.

THE Surgical Instrument Manufacturers' Association held their annual dinner at the Holborn Restaurant on Oct. 11th. The chair was occupied by Mr. Patrick C. Maw, who received the guests with Mrs. Maw (senior). In accordance with custom the chairman drank wine with the members of the separate sectional committees and of the main committee. After the loyal toasts Mr. H. E. Curtis, seconded by Mr. A. W. Down, proposed the health of the Association and chairman, and Mr. Maw responded. Colonel A. Young proposed the health of the guests, and Mr. Charles E. Goulden spoke in reply.

MOTOR ACCIDENTS AT EDINBURGH.—During the year ended with Sept. 30th 443 cases of accidents caused by mechanically propelled vehicles were admitted. The cost of treatment was £3223, and the patients' aggregate stay was 7894 days.

THE FOUNDER OF HOSPITAL SATURDAY.—The Earl of Meath died in London on Friday last week at the age of 88. As Lord Brabazon he founded in 1874 the Hospital Saturday Fund, of which he was the first secretary. The amount collected in the first year was £6403; the annual collection now exceeds £100,000. Lord Meath also founded the Dublin Hospital Sunday movement.

COSHAM HOSPITAL INQUIRY.—The public inquiry, which was ordered by the Ministry of Pensions into the administration of the Ministry's hospital at Cosham, ended at Portsmouth last week. Sir Frederick Willis presided. On the last day of the inquiry evidence was given by the three chaplains to the hospital—the Rev. J. W. Watson, the Rev. A. J. Craig, and the Rev. F. E. Stainford—who described the administration as "most satisfactory," "quite good," and "most competent." Mr. C. H. Marsh, a magistrate who frequently visits the hospital, said that the patients always spoke well of their treatment, and Mr. F. Melling, the welfare officer, described the many recreational facilities enjoyed by the inmates. Sir Frederick Willis, who said that he had been much struck by the good work done in the hospital workshops, pointed out that although the coroner's jury had specifically found that there was mal-administration, none of those responsible for the statements upon which that opinion was formed had come forward to substantiate them.

BRITISH EMPIRE CANCER CAMPAIGN.—In the absence of Lord Reading, Sir John Bland-Sutton presided on Oct. 14th at the quarterly meeting of the Grand Council of the Campaign. The Council renewed the grant to the Cancer Hospital for radiological research on the effect of X rays upon the blood constituents and bone-marrow. A further grant of £250 for one year was also made to Mr. E. Nevill Willmer for the continuation of his research work on the relation of the chemical nature of the media in which cultures grow to the growth of the cultures. Mr. Willmer formerly worked at the University of Manchester but has now been appointed lecturer in the Physiological Department of the University of Cambridge.

A report from the Finance Committee showed that grants made by the Campaign during the last year for research purposes amounted to approximately £25,000, whilst donations received during that period only amounted to about £17,000. The Finance Committee asked that special efforts should be made to increase donations so that the cancer research centres could be kept at their maximum activity.

The general secretary reported that details of the policy which the National Radium Commission proposed to adopt, relative to the coördination of existing bodies interested in the use of radium, had not been so far communicated to the Campaign. The Grand Council expressed a hope that early steps would be taken to bring about coördination between the work of the National Radium Commission, the use of the radium in the hands of King Edward's Hospital Fund, and the various radium centres in existence which have been formed by the Campaign.

It was reported that the North of England Council of the British Empire Cancer Campaign, combining the counties of Northumberland, Durham, Cumberland, and Westmorland, had been founded under the presidency of the Duke of Northumberland, with Sir Thomas Oliver as chairman of the executive committee.

A CONFERENCE ON WATER-SUPPLY AND POLLUTION. The British Waterworks Association is arranging conferences on Thursday, Nov. 21st, during the holding of the Public Works, Roads and Transport Congress and Exhibition at the Royal Agricultural Hall, London, N. In the morning, at 11 A.M., Mr. G. L. Pepler, chief town-planning inspector of the Ministry of Health, will read a paper on Water-supply as a Factor in Town and Regional Planning. At 3 P.M. a paper on the Purity of Drinking Waters from the Biological Aspect will be given by Dr. Wilfrid Rushton, of the Biological Department of St. Thomas's Hospital Medical School; and Dr. J. B. Firth, of the Chemistry Department, University College, Nottingham, will make some observations on river pollution.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Oct. 22nd.—5 P.M., MEDICINE. Discussion on Diseases of the Pituitary Body. To be opened by Dr. W. J. Adie. Followed by Mr. Norman Dott, Prof. E. C. Dodds, Dr. O. Leyton, Dr. Macdonald Critchley, Mr. H. W. B. Cairns, and Dr. Oljenick. Members of the Section of Comparative Medicine are specially invited to attend this meeting and take part in the discussion. 5.30 P.M., General Meeting of Fellows.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Presidential Address. Mr. Stewart R. Douglas: Some Recent Investigations into Virus Diseases.

THURSDAY.—8.30 P.M., UROLOGY. Presidential Address. Mr. Frank Jeans: Urological Statistics as a Criterion of Progress.

FRIDAY.—5 P.M., DISEASES IN CHILDREN. (Cases at 4.30 P.M.) 8 P.M., EPIDEMIOLOGY. Paper. Dr. S. P. James: Modern Aspects of the Epidemiology, Prevention and Treatment of Malaria.

MEDICO-LEGAL SOCIETY.

THURSDAY, Oct. 24th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Lord Riddell: Ancient Laws and Modern Women (Presidential Address).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, Oct. 21st.—5 P.M., Mr. Cecil P. G. Wakeley: Specimens Illustrating Tumours of the Brain.

FRIDAY.—5 P.M., Sir Arthur Keith: Dislocations of the Hip-joint, Congenital and Acquired.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 21st, to SATURDAY, Oct. 26th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Lecture by Mr. H. W. Carson: On Indigestion from the Surgeon's Standpoint. No fee. Tues., 8.30 P.M., Lecture by Dr. L. S. T. Burrell: Intrathoracic Tumours. Fri., 8.30 P.M., Lecture by Dr. L. S. T. Burrell: Bronchiectasis, Abscess of Lung and Empyema. Specially suitable for M.R.C.P. candidates.—ROYAL CHEST HOSPITAL, City-road. Tues., 2 P.M., Demonstration of Cases in Wards by Dr. Ernest Fletcher. No fee.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Thurs., 2 P.M., Demonstration (general surgery) by Mr. Herbert Paterson. No fee.—THE METROPOLITAN HOSPITAL, Kingsland-road, N. Special post-graduate course in Medicine, Surgery, and Special Branches. Daily 10.30–5.30, demonstrations, operations, and lectures for two weeks.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Second week of course in gynæcology, afternoons and some mornings.—LONDON TROPICAL HOSPITAL, Gordon-street, N.W. Tues. and Thurs. afternoons, 2 P.M., Demonstrations.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Second week of course in Diseases of Children. Mornings only.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Second week of clinical course in Diseases of the Throat, Nose, and Ear. All day. Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.6.

MONDAY, Oct. 21st.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Wards.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw, Medical Out-patients. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

THURSDAY.—11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department. 9.30 A.M.

SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.

Daily, 10 A.M. to 5 P.M., Medical, Surgical and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 21st.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 21st.—12 noon, Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Syphilis of Nervous System.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: Disorders of Memory.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: Demonstration of Methods of Testing the Acoustic Nerve.

FRIDAY.—12 noon., Dr. Purdon Martin: Anatomy and Physiology of the Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Sir Percy Sargent: Tumours of the Posterior Cranial Fossa.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

THURSDAY, Oct. 24th.—4 P.M., Dr. Hector C. Cameron: The Nervous Child.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Oct. 21st.—5 P.M., Dr. R. J. Brocklehurst: Secretion of the Digestive Juices. (Second of four public lectures.)

FRIDAY.—5.30 P.M., Mr. C. S. Elton: The Future of Animal Ecology. (First of three lectures.)

KING'S COLLEGE, Strand, W.C.

TUESDAY, Oct. 22nd.—5 P.M., Mr. J. W. Pickering, D.Sc.: Blood Plasma and Platelets. (Third lecture.)

THURSDAY.—5 P.M., Mr. J. A. Hewitt, D.Sc.: Metabolism of the Carbohydrates and Fats. (Second of four lectures.)

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL, Albert Embankment, S.E.

TUESDAY, Oct. 22nd.—5 P.M., Dr. A. St. G. Huggett: Physiology of the Fœtus. (Third lecture.)

KING'S COLLEGE FOR HOUSEHOLD AND SOCIAL SCIENCE, Campden Hill-road, W.

FRIDAY, Oct. 25th.—5 P.M., Prof. V. H. Mottram: Human Nutrition. (Second of six lectures.)

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 22nd.—5 P.M., Dr. H. W. Barber: Immunity and Anaphylaxis.

THURSDAY.—5 P.M., Dr. W. Griffith: Principles of Treatment.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 23rd.—4.30 P.M., Mr. W. K. Irwin: The Diagnosis and Treatment of Some Important Bladder Conditions.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Oct. 23rd.—3.30 P.M., Dr. Cyril Horsford: The Correct Training of the Voice as a Factor in Health.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 23rd.—4 P.M., Mr. J. C. Stobart: Broadcasting and Health.

FRIDAY.—5 P.M., Prof. R. A. Peters: Coördinative Biochemistry of the Cell and Tissues. (Second Harben Lecture.)

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 22nd.—4.15 P.M., Dr. F. R. Ferguson: Congential Neurosyphilis.

FRIDAY.—4.15 P.M., Dr. G. Jessel: Modern Methods in Treatment of Pulmonary Tuberculosis.

ANCOATS HOSPITAL, Mill-street, Manchester.

THURSDAY, Oct. 24th.—4.15 P.M., Dr. A. Renshaw: Cystological Changes in the Blood and their Significance.

UNIVERSITY OF BRISTOL.

TUESDAY, Oct. 22nd.—8.30 P.M. (in the Physiological Theatre of the University), Mr. A. Rendle Short: Ten Years' Progress in Surgical Treatment (Long Fox Memorial Lecture).

Appointments.

FRASER, J. W., M.D., C.M. Edin., has been appointed Medical Officer of Health, Hull.

HOGG, C. B., M.D., Ch.B. Aberd., D.P.H., Medical Officer of Health, Kettering.

POLLOCK, A. M., M.B., Ch.B. Glasg., Certifying Surgeon under the Factory and Workshops Acts, Tunbridge Wells.

SCOTT, J. A., M.D., Ch.B. Liverp., D.P.H., Medical Officer of Health, Shipley.

Vacancies.

For further information refer to the advertisement columns.

Adelaide Hospital.—12 Jun. Med. Graduates. Each £100.
Adelaide University.—Elder Professor of Anatomy and Histology. £1100.
Ashton-under-Lyne, District Infirmary.—Two H.S.'s. Each at rate of £150.
Barnstaple Dispensary, Area of the County of Devon.—Tuber. O. £750.
Bath, Royal United Hospital.—Asst. H.S. At rate of £100.
Bath, Somerset and Wilts Central Children's Orthopædic Hospital, Combe Park.—H.S. At rate of £120.
Bethlem Hospital, Lambeth-road, S.E.—Res. H.P. £25 per quarter.
Birmingham City.—M.O. for Maternity and Child Welfare. £600.
Birmingham General Hospital.—Med. Reg. and Res. M.O. £155.
Birmingham, Queen's Hospital.—Med. Reg. £200. Also Res. Anæsthetist. £70–£100.
Bradford Royal Infirmary.—Hon. Asst. P. Also H.P. £150.
Brighton, Sussex Maternity and Women's Hospital.—Res. H.S. £130.
Cancer Hospital, Fulham-road, S.W.—Part-time Research Radiological Asst. 1 gn. each attendance. Also H.S. At rate of £100.
Carlisle, Cumberland Infirmary.—H.P. At rate of £155.
Charing Cross Hospital, W.C.—Hon. Clin. Asst. for X Ray Dept. Also Res. M.O. £350.
Colchester, Essex, County Hospital.—Asst. H.S. and Reg. £120.
Connaught Hospital, Orford-road, E.—M.O. At rate of £150. Also Res. H.P. and Res. H.S. Each at rate of £100.
Derby, Derbyshire County Sanatorium, near Chesterfield.—Res. Asst. M.O. £350.
Doncaster Royal Infirmary.—Third H.S. At rate of £150.
Douglas, Isle of Man, Noble's Hospital.—Res. H.S. £175.
Dover Borough.—Asst. M.O.H. £700.
Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120.
Exeter Royal Devon and Exeter Hospital.—H.S. to Special Depts. At rate of £130.
General Lying-in Hospital, York-road, Lambeth, S.E.—Registrar.
Great Yarmouth General Hospital.—Jun. H.S. £125.
Hackney Hospital, High-street, Homerton, E.—Jun. Asst. M.O., £350.
Hereford General Hospital.—H.P. At rate of £150.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Jun. H.P. for Frimley Sanatorium. At rate of £100.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Reg. £100. Res. M.O. Also H.P. At rate of £150 and £100 respectively.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. At rate of £250.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.
Huddersfield Royal Infirmary.—Jun. H.S. At rate of £150.
Ilford Emergency Hospital.—Hon. Radiologist. £50.
Jersey General Hospital, &c.—Res. M.O. £200.
Kingston-upon-Hull City and County.—Asst. M.O.H. £600.
Kingston-upon-Thames, Surrey County Mental Hospital.—Third Asst. M.O. £300.
Leeds University.—Cancer Research Fellowship. £500.
Leicester, Leicestershire County Council.—Asst. County M.O.H. £650.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool County Borough.—Jun. Asst. Sch. M.O. £600.
Liverpool, Royal Southern Hospital.—Medical Tutor and Registrar.
Macclesfield General Infirmary.—Second H.S. At rate of £150.

Manchester, Baguley Sanatorium.—Sen. Asst. M.O. £500. Also Asst. M.O. £350.
Manchester, Royal Infirmary.—Asst. M.O. for Massage and Electrical Dept. At rate of £100.
Manchester, Salford Royal Hospital.—Cas. H.S. At rate of £125.
Manor House Hospital, Golders Green, N.W.—H.S. At rate of £200.
Miller General Hospital, Greenwich-road, S.E.—Orth. H.S. At rate of £150. Hon. Surgeon. Also Hon. Physician to Skin Dept.
Plymouth City.—Asst. M.O.H. for Maternity and Child Welfare Dept. £600.
Portsmouth Dockyard and Government Civil Establishments Medical Society.—M.O.
Portsmouth Royal Hospital.—Sen. H.S. At rate of £175. Also H.P. and two H.S.'s. Each at rate of £130.
Preston and County of Lancaster Royal Infirmary.—Res. Surg. O. £300. Also H.S. At rate of £150.
Queen's Hospital for Children, Hackney-road, E.—H.P., Cas. O., and H.S. All at rate of £100. Also Clin. Asst. for Orthopædic Dept. 5*s.* each attendance.
Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.
Rotherham Hospital.—H.P. £180.
Rotherham Union Hospital, Alma-road.—Res. Asst. M.O. £125.
Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. £150.
Royal Naval Dental Service.—Dental Officers.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Gynæcological Reg. Also H.S. At rate of £100.
St. Helen's County Borough.—Tuber. O. £600.
St. John's Hospital, Lewisham, S.E.—Radiologist. Also Res. M.O. At rate of £100.
St. Mary's Hospital, W.—Asst. Ophth. S. Also Asst. S. for Diseases of the Ear, Nose, and Throat.
St. Peter's (Whitechapel) Hospital, Vallance-road, E.—Res. Asst. M.O. £450.
Sheffield Royal Hospital.—Res. Anæsthetist. £80.
Sheffield, South Yorkshire Mental Hospital.—M.O. £400.
Stroud General Hospital.—H.S. At rate of £125.
Torquay, Torbay Hospital.—Hon. Anæsthetist.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. Med. Reg. Also Hon. Surg. Reg.
West Bromwich, Hallam Hospital.—Res. H.S. £250.
West End Hospital for Nervous Diseases, Welbeck-street, W.—Hon. Asst. Physician.
West London Hospital, Hammersmith, W.—Asst. M.O. At rate of £450. Also three Jun. Asst. M.O.'s. Each at rate of £350.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. and Jun. Non-res. H.S.'s. At rate of £150 and £100 respectively.
Wolverhampton, Royal Hospital.—H.S. At rate of £150.
Worcester General Infirmary.—Jun. Res. M.O. £120.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Southall (Middlesex) and Mevagissey (Cornwall).

Births, Marriages, and Deaths.

BIRTHS.

BLACKWELL.—On Oct. 10th, at Maison Bruges, Don-road, Jersey, the wife of Dr. A. S. Blackwell, of a daughter.
RITCHIE.—On Oct. 3rd, at Laggan, Epsom, the wife of Dr. R. H. A. Ritchie, Benhill-avenue, Sutton, Surrey, of a daughter.
WATKINS.—On Oct. 7th, at "Eskdale," King's Lynn, the wife of Dr. E. Holmes Watkins, of a daughter.
WHITLEY.—On Oct. 4th, at Thorneybrook, Chelmsford, the wife of J. T. Whitley, M.B., Ch.B., of a son.

MARRIAGES.

CRAIG—ALLEN.—On Oct. 12th, at St. James's, Birkdale, John Craig, M.D., to Mary Allen, M.B., Ch.B.

DEATHS.

BREMNER.—On Oct. 12th, at St. Giles-street, Norwich, James Morrison Gardiner Bremner, M.B., C.M. Aberd., T.D., O.B.E., Lieut.-Colonel late R.A.M.C. (T.F.), aged 63.
GAIRDNER.—On Oct. 11th, at "Sans Souci," Cheltenham, Matthew William Gairdner, M.B. Edin., aged 79.

N.B.—A fee of 7s. 6d is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Comments, and Abstracts.

SOME OF LETTSOM'S CONTEMPORARIES.

Being the Presidential Address delivered to the Medical Society of London on Oct. 14th

BY DONALD ARMOUR, C.M.G., F.R.C.S. ENG.,
SENIOR SURGEON TO THE WEST LONDON HOSPITAL.

GENTLEMEN,—My first duty on taking this honourable and ancient chair of President of the Medical Society of London is to offer you my sincere thanks and appreciation for the very great honour you have put upon me. To be mentioned amongst the long list of holders of this distinguished office is, indeed a satisfaction, but one tempered by a sense of responsibility and some misgiving, lest one fall short of the high standard set by my predecessors in the past 156 years.

Our founder, John Coakley Lettsom, was born in 1744 and died in 1815. During this period of 71 years great historic events took place which had a lasting effect upon the destinies of peoples. His generation witnessed historic episodes, whose dramatic interest equalled the importance of the changes they effected in world history. As a lad of 15 Lettsom must have gloried and grieved with all England at the news of Wolfe's death and victory at Quebec, which won us Canada, and lost us one of our greatest soldiers. In those years, too, Clive was giving us India, though a less glorious death awaited him.

During the next 25 years the aspect of the world had changed. The birth of the United States of America, made possible by Wolfe's victory, had taken place. At middle age Lettsom witnessed the cataclysm of the French Revolution, and all the mighty episodes of the Napoleonic wars marked his declining years. It was an age of enlightenment, of the revolt of the intellect against tradition and prejudice. It was the golden age of benevolent despots, from Catharine II., Frederick the Great, and the noblest and least successful, Joseph II., to lesser rulers throughout Europe. It was largely owing to their efforts that the enlightened ideas were spread.

Momentous changes were taking place in almost every branch of literature and thought, so that the time of Lettsom witnessed the final emancipation of the human intellect. In no direction was this more marked than in medical thought and teaching. For, prior to this time, very little was accomplished, if we except the work of Harvey, which has withstood the test of time. Based largely on metaphysical speculation, the theories of medicine could not withstand the test of scientific proof. It was, indeed, an age of theories and system-makers. Linnacus (1707–78), Stahl (1660–1734), Cullen (1710–90), Hoffmann (1660–1742), Erasmus Darwin (1731–1802), "the disputatious and disreputable" Brown (1735–88), as Allbutt described him, and Boerhaave (1668–1738), were all propounders of a "succession of forgotten theories." The effects produced upon medicine by these systems has been well described by Arnold Chaplin in his paraphrase from Lord Morley's "Voltaire." "For all the systems we see only dismal tracts of medical darkness, we hear only the humming of the doctors as they serve forth. to men thirsting after knowledge, the draff of a medical superstition."

But the dawn of a better day was at hand. The days of pure speculation, or of any general belief in pure speculation, were over, and in their place arose the burning desire to solve the mysteries of pathological processes. After smouldering for some 70 years the fires of progress in the sciences of Physiology, Chemistry, and Anatomy leapt again into flame, and burned with a renewed brilliancy during the period we are discussing.

The Dawn of Physiology.

Albrecht von Haller (1708–77) was the author of the first great modern treatise on physiology. Born at Berne, he graduated at Leyden, and spent 17 years at the newly established University at Göttingen, where he taught all branches of medicine, established Botanic Gardens, wrote some 13,000 scientific papers, and incidentally did some of his best experimental work. Nor were his energies limited to purely scientific work, for he stands in the first rank of our medical poets and historical novelists. In 1734 his application for the post of City Physician at Berne was rejected, with the comment, "He is a poet; why should he want to be a hospital physician?"

"His scientific work has long since passed into the impersonal stage, but to his credit stand researches of the first rank in the irritability of muscle and nerve, a demonstration of the myogenic theory of the heart's action, and an admirable and accurate account of the mechanics of the heart's action" (Osler). To read "Haller redivivus," by Kronecker, is to

realise how many so-called "new" discoveries are foreshadowed in his works. Haller remains one of the outstanding figures of the eighteenth century.

Electrophysiology had its origin in Galvani's epochal discovery of animal electricity. Galvani (1737–98) was born in Bologna and began studying theology, but early turned to anatomy and physiology, became Professor of Anatomy in 1762, and practised surgery and midwifery. His wife, Lucia Galeazzi, was intimately associated with him in his great discovery. It was followed up with great skill and comprehension by Volta (1745–1825), who was Professor at Pavia. "Who," says Helmholtz, "when Galvani touched the muscles of a frog with different metals, and noticed their contraction, could have dreamt that all Europe would be traversed with wires, flashing intelligence from Madrid to St. Petersburg, with the speed of lightning? In the hands of Galvani, and at first, even in Volta's, electric currents were phenomena capable of exerting only the feeblest forces, and could not be detected except by the most delicate apparatus. Had they been neglected on the ground that the investigation of them promised no immediate results, we should now be ignorant of the most important and most interesting of the limits between the various forces of nature."

Physicists and Chemists.

To the physicists and chemists of the day we owe the completion of the modern theory of respiration. This was based upon the discovery and isolation of the different gases in the atmosphere—viz., carbon dioxide by Black (1757), hydrogen by Cavendish (1766), nitrogen by Rutherford (1772), oxygen by Priestley and Scheele (1771) and Lavoisier (1775). Priestley (1733–1804), confused by his adherence to the false theory of Stahl, only saw respiration as "the phlogistication of dephlogisticated air." It was left to the genius of Lavoisier (1743–1794) to reveal the true nature of the interchange of gases in the lungs, and to bury, once and for all, the phlogistion theory.

"The middle of the seventeenth century saw the profession thus far on its way—certain objective features of disease were known, the art of careful observation had been cultivated, many empirical remedies had been discovered, the coarser structure of man's body had been well worked out, and a good beginning had been made in the knowledge of how the machinery worked—nothing more. What disease really was, where it was, how it was caused, had not even begun to be discussed intelligently." The best of men had little or no appreciation of the importance of the study of the changes wrought in the body by disease. Sydenham scoffed at the value of post mortems. The first time that anatomical knowledge was systematically applied to the service of medicine was in the great work, "de Sedibus et Causis Morborum per Anatomen indagatis," published in his seventy-ninth year by Giovanni Battista Morgagni (1682–1771). It was the foundation of modern pathological anatomy, or, as Virchow said, the introduction of the "anatomical concept" into medical practice It was the first time that the records of post-mortem findings were correlated with clinical records to any large extent. This work, "one of the great books in our literature" (Osler) was translated into English by Benjamin Alexander in 1769, and had a very great influence upon the development of medical science.

Another publication, contemporary with that of Morgagni, should be mentioned, having as it did a profound influence upon the clinical medicine of the future. Leopold Auenbrugger was born at Gratz, in Styria, on Nov. 19th, 1722. Though the son of an inn-keeper, he received a University education, and his medical training was obtained under Van Swieten, a great authority of that time. In 1751, at the age of 29, Auenbrugger was appointed physician to the Spanish Military Hospital in Vienna. After seven years' observation and testing of his method he published, in 1761, his epoch-making volume, entitled, "Inventum novum ex percussione thoracis humani, ut signo, abstrusos interni pectoris morbos detegendi." The new method was, however, practically unrecognised by the clinicians of his time. It was left to Corvisart, physician to Napoleon and leader of medical thought in France, to obtain for Auenbrugger's work its proper recognition. This was 47 years after its first appearance in Germany, and just one year before Auenbrugger died in 1809.

Morgagni's influence upon medicine was further strengthened and increased by the work of Bichat (1771–1802), who in his all too short life of 31 years, some of it spent as a surgeon in the French Revolutionary Army, showed himself a master-worker in scientific medicine and anatomy. His "Traité d'anatomie descriptive" in five volumes, and his "Anatomie générale, appliquée à la Physiologie et à la Médicine," entitle him to be called the creator of descriptive anatomy, and opened out an entirely new field for anatomists. Like Hunter, he regarded disease as an alteration of vital properties or principles. That in his "Physiological Researches upon Life and Death" he adhered to an obsolete belief, which he summed up in his famous definition of life as "the sum of the forces that resist death," does not detract from his great scientific attainments. His studies laid the foundation of modern histology.

Morbid Anatomy and Matthew Baillie.

It was in this country that the coping-stone was placed upon this building up of the science of morbid anatomy. Matthew Baillie (1761–1823), a nephew of the Hunters, published in 1793 his work, "The Morbid Anatomy of some of the Most Important Parts of the Human Body." It was the first book in English on the subject, and the first in which morbid anatomy was treated as a subject by itself. Baillie has been called the "father of medical pathology." Morgagni's work, which may be regarded as the foundation of the study of diseased structures and organs, is long, intricate, and difficult of reference. Baillie's work, illustrated by William Clift, is characterised by its conciseness and its accuracy of observation.

A contemporary estimate of his work shows how warmly it was received on its appearance. "Though former writers had treated this subject (morbid anatomy) in innumerable volumes, it was to be regretted that before Dr. Baillie's time there was no regular system or method of arrangement pursued by them which could render this study useful. Dr. Baillie, by a nice and accurate solution of the morbid appearances of every part of the body, and the peculiar symptoms which in life distinguish them, placed in a narrow and clear compass an extensive and valuable mass of information, before his time contemptible." It exerted a profound influence upon medical teaching, not only in this country, but abroad as well.

These, then, were the contemporaries of Lettsom, who did most to influence the development of medicine in his day. Others there were, though of less renown, who worked quietly in their modest way to advance some particular branch of our profession.

Hewson (1739–74), an almost forgotten English physiologist, first a pupil of the Hunters, then a partner at the school in Great Windmill-street, was awarded the Copley Medal for his work on the lymphatics, while modern research has confirmed his views upon coagulation of the blood. Knowledge of the physiology of digestion was advanced by the work of de Réamur (1683–1757), and confirmed by Spallanzani; while Cruikshank, the Physician of Dr. Johnson in his last illness, and Whytt, both of Edinburgh, were pioneers in the physiology and pathology of the nervous system.

William Withering (1741–99), a Shropshire graduate of Edinburgh University, was one of the ablest clinicians of his time, and one of the greatest medical botanists, hence his title, "the flower of physicians." He was a pioneer in the correct use of digitalis. He had learned from an old Shropshire woman that foxglove was good for dropsy, and then began trying it in heart disease, and recommending its use wherever he could. In this he was firmly opposed by Lettsom, who, in that day, enjoyed the largest and most remunerative practice in London. Lettsom, on the recommendation of Withering, had prescribed digitalis in eight cases, all of which terminated fatally. Its use had led to the fatal result of the last illness of Charles James Fox. Lettsom published his cases, and warned the profession against the use of the drug.

William Heberden (1710–1801), whom Johnson styled "Ultimus Romanorum," the last of our great physicians, is remembered by his descriptions of varicella, angina pectoris, and the nodules of arthritis deformans. His *Commentaries*, as Dyce Duckworth has pointed out, are rich in clinical minutiæ.

John Fothergill (1721–80), a Quaker, pupil of Monro primus, and friend of Lettsom, is commemorated in this Society by the medal which bears his name. He was employed by Monro in revising his work on Osteology, and he was the first graduate of Edinburgh University to be admitted to the Royal College of Physicians of London. His "Account of the sore-throat attended with ulcers" ranks as a classic amongst the descriptions of diphtheria, and he was the first to describe the condition we know now as tic douloureux. He established at Upton, in Essex, the finest botanical garden to be found in Europe at that time. Having family connexions and many friends in America, it was only natural that he showed great sympathy for the American colonies, advocated the repeal of the Stamp Act, and was associated with Benjamin Franklin in a plan for reconciliation with the Mother-country. Of him Franklin said, "I can hardly conceive that a better man has ever existed." And J. F. Payne defines his place in the profession in the following words: "He will always remain an important representative of the naturalistic and anti-scholastic tendencies of English medicine in the latter half of the 18th century."

Towards the end of the century came one of the greatest triumphs in preventive medicine, the introduction of vaccination by Edward Jenner (1749–1823). The life and work of this friend and pupil of John Hunter's are, like the latter's, too well known to us all to need recapitulation here.

The great centre of the teaching of anatomy at the beginning of the eighteenth century was Paris. It was due to the Monros, who held the Chair of Anatomy in unbroken succession for 126 years, that Edinburgh became a great centre of medical teaching at this time. But many of the anatomists of this period were surgeon-anatomists, and most of their work was topographical. Surgical anatomy had, in fact, its birth at this time. This, too, was the age of anatomical illustrations, and Cheselden, Haller, William Hunter, Albinus, and Scarpa all produced masterpieces of artistic talent.

Surgery and Surgeons.

What of surgery and surgeons during Lettsom's period? During the greater part of the eighteenth century the status of surgery was very low, with the possible exception of French surgery. In England there were no surgeons of first rank before the time of Cheselden, Pott, Hunter, and Abernethy. In Germany, surgery had to wait until the time of Frederick the Great before being taken out of the hands of the barber, the executioner, and the strolling bone-setter. The Surgeon-General of the Prussian Army was a barber. The Prussian Army Surgeon of this time ranked above a Drummer but below a Chaplain.

Up to the time of John Hunter Paris was the only place where surgery could be properly studied. Desault, the teacher of Bichat, Venel, the originator of surgical orthopædics, David of Rouen, who wrote contemporaneously with Pott on caries of the spine, Chopat and Moreau, were the most notable of French surgeons.

Of German surgeons, Johann Bilguer, Surgeon-General under Frederick the Great, is notable as the author of the first plea for conservative surgery of the joints, and August Richter for his classical treatise on hernia. Cheselden, surgeon to St. Thomas's Hospital, died when Lettsom was eight years old, so does not come strictly into this period.

Charles White (1728–1813), of Manchester, was the most eminent surgeon in the north of England. He excised the head of the humerus in 1768, and introduced the method of reducing dislocations of the shoulder by placing the heel in the axilla. Incidentally, he was the first to describe phlegmasia alba dolens.

Percival Pott (1714–88) served St. Bartholomew's Hospital "man and boy for half a century." His writings, only commenced when he was 42 years of age, exercised a very great influence upon surgery during the last half of the eighteenth century. D'Arcy Power has said that Pott's name is better known on the Continent than that of any other English surgeon except Lister—better even than that of John Hunter—by the rank and file who have no knowledge of the history of surgery. "Mentally, he was not much in advance of his time, for scientific surgery had not yet come into being, and he was essentially a clinical surgeon. For the most part he stood on the old ways and followed the old lines of treatment, but he straightened out and made plain the paths, so that his followers walked along them most easily, and were able to go further" (D'Arcy, Power).

In Edinburgh John Bell (1763–1820) was the outstanding figure in surgery at the end of the eighteenth and beginning of the nineteenth centuries. His "Principles of Surgery," illustrated with beautiful original engravings, and full of historical and clinical matter, is a monument alike to his skill as a surgeon and to his artistic talents as an illustrator. Unfortunately his quarrels with Benjamin Bell and Munro secundus did much to impair his popularity and to keep him out of the Royal Infirmary. But with Desault and John Hunter he must be regarded as a founder of the surgery of the vascular system.

All the surgeons up to this time were clinical surgeons and knew nothing of pathology. In spite of the publication of Morgagni's great work pathology as a science had no real existence. For example, though Mestivier in 1759 was the first to record an operation upon a case of disease of the appendix and to describe the post-mortem findings, and though Lamotte, in 1766, gave the first account of fæcal concretions in the appendix, they seemed to have made no impression whatever upon the minds of the profession.

It is only with the coming of John Hunter (1728–93) that surgery began to take its place as a branch of scientific medicine, firmly based upon physiology and pathology. It ceased to be regarded as merely a technical method of treatment.

D'Arcy Power pertinently asks the question why is Hunter looked upon, by those who know, as the greatest of surgeons? "He was a bad lecturer, a confused thinker, and a very indifferent writer, yet he found surgery mediæval and clinical; he left it a science." The answer is in his museum, where the whole science of surgery is displayed in terms of morbid anatomy, comparative as well as human.

His devoted pupil John Abernethy (1764–1831) was the immediate successor of Hunter, and constituted himself the champion of his master's theories. But his activities are mainly after Lettsom's time.

Early Presidents of the Medical Society.

These contemporaries of Lettsom were the "giants" of the profession. But what of the lesser lights, his everyday associates here in London, and in this Society, which he was instrumental in founding? During the 42 years from its foundation until Lettsom's death the Medical Society knew 11 different presidents. He himself had held the office three times, while his friend, James Sims, held it for no less than 22 years. Of these 11 presidents five were graduates of Edinburgh University, so it is evident that the invasion of London from the North had already commenced!

Our first President was John Millar, who was born in Scotland in 1733, and, after graduating at Edinburgh University, commenced to practise at Kelso. On being appointed physician to the Westminster General Dispensary, afterwards Westminster Hospital, he settled in Pall Mall and became an active promotor of this Society. He died in 1805. Millar was an excellent physician, though eccentric and irritable. He seems to have specialised in diseases of women and children, and wrote largely on asthma, whooping-cough, and the prevailing diseases in Great Britain. To Millar the elder Benjamin Rush, of Philadelphia, addressed in 1770 his dissertation on "The Spasmodic Asthma of Children," in which he acknowledged his obligation to Millar's "excellent treatise" on the subject.

Our third President, Nathanial Hulme, was a Yorkshireman. Born at Hulme Thorpe, near Halifax, in 1732, he was a student at Guy's before entering the Navy as surgeon's mate. He graduated M.D. at Edinburgh in 1765 and settled in Hatton Garden. He was appointed physician to the City of London Lying-in Hospital, an office which did not include obstetric practice, and was not tenable by a accoucheur. On March 17th, 1774, he was elected physician to the Charterhouse, by the interest of Lord Sandwich, First Lord of the Admiralty, and removed to Charterhouse-square, where he resided until his death. On 18th January, 1777, he gave the Oration before this Society. In 1787 he received a Gold Medal from the Medical Society of Paris upon the subject of "Sclerosis of the Cellular Tissue in the New Born." He was elected F.R.S. in 1794. He died on March 28th, 1807, from the effects of a fall from the roof of his house, to which he had ascended to observe the damage done to the chimneys by a hurricane. He was buried at his own request in the Pensioners' Burial Ground of the Charterhouse.

Our fourth President, George Edwards, was born in 1752, and graduated at Edinburgh University in 1772. He was an untiring promotor of political and social schemes, none of which appear to have attracted any attention. He was a prolific writer in support of his self-imposed mission, and the British Museum contains no less than 42 of his books. One of them is significant and is entitled "A certain way to save our Country and to make us a more happy and flourishing people than at any former period of our history."

The next, and fifth, holder of this office, Samuel Foart Simmons, was born at Sandwich, in Kent, in 1750. He studied at Edinburgh and Leyden, where he took his degree in 1776. After visiting the principal medical centres on the Continent he settled in London, and in 1781 he was appointed physician to St. Luke's Hospital and became a recognised authority on mental diseases. So much so that he was finally called in to take charge of George III when that monarch had his third relapse of mental disorder, and it is probable that it was only then that he received anything like capable and judicious treatment. In 1779 Simmons published a Medical Register, the first time any attempt had been made to gather together any particulars of our profession and its activities. The Register appeared only three times, in 1779, 1780, and 1783. He was also the first editor of *The London Medical Journal*. Simmons was elected a Fellow of the Royal Society in 1779, and in addition he was a Member of the Society of Antiquaries, a Fellow of the Acadamies of Nantes, Montpelier, and Madrid, of the College of Physicians of Lorraine, and of the Royal Society of Medicine of Paris, as well as an Honorary Member of the Medical Society of Edinburgh and the Philosophical Society of Manchester. He died on 23rd April, 1813, at his house in Poland-street, and was buried at Sandwich.

John Sims, our sixth President, was born at Canterbury in 1749. His inaugural thesis on taking his M.D. at Edinburgh in 1774 was entitled "The uses of cold water internally." To a graduate of Edinburgh it would not appear that this subject allowed much scope for discussion! He settled in London and practised largely as an obstetrician. In 1780 he was appointed physician and man-midwife to the Lying-in Charity and Physician to Princess Charlotte. John Sims, was, moreover, a noted botanist of his day, and is said to have introduced stramonium for the treatment of asthma into this country. His herbarium is now at Kew. He died at Dorking in 1831.

Our next President, John Whitehead, had a varied career. He was born in Cheshire about 1740, of humble parentage. Early in life he was converted by a Methodist preacher and joined the Wesley movement. After acting as a lay preacher at Bristol he married and set up as a linen draper. Removing to London, he joined the Society of Friends, and conducted a large boarding-school at Wandsworth. Then Barclay, the brewer, offered him a life annuity of £100 to travel with his son on the Continent. He accepted, and on reaching Leyden he entered as a medical student in 1779, and graduated M.D. in 1780. On returning to London he became, through Lettsom's influence, physician to the London Dispensary. In 1784, the Society of Friends pushed his candidature for the post of physician to the London Hospital, but his election was declared invalid owing to some slight irregularity. He left the Society of Friends and again became a Methodist. He was Wesley's medical adviser and preached his funeral sermon. He died at Fountain Court, Old Bethlem, in 1804.

Of our eighth President, John Relph, I can tell you little. He was a native of Cumberland and entered Leyden in 1778, graduating M.D. the same year. He was made a Licentiate of the Royal College of Physicians in 1784 and elected a physician to Guy's Hospital in 1789. He died in Mark Lane in 1804.

The form and features of our ninth President, James Sims, are familiar to us all, sitting, with a cocked hat upon his head, in the Presidential Chair, as painted by Medley in the picture of our founders. He is described by a contemporary surgeon (Wadd) as "a good-humoured pleasant man, full of anecdote, an ample reservoir of good things, and for figures and facts a perfect chronicle of other times." Needless, after this, to say he was an Irishman, born in Co. Down in 1741. He took his M.D. at Leyden in 1764 and practised for a time in Tyrone. On removing to London he received very great assistance from Lettsom, and soon acquired a lucrative practice. He served this Society as President for 22 consecutive years, being finally displaced only by the strenuous exertions of the younger Fellows. The revolt was led by Marcet, physician to Guy's, and Yelloly, physician to the London Hospital. A contemporary account of the secession, which resulted in the formation, in 1805, of the Medical and Chirurgical Society, is not without interest, even though not perhaps pleasing to our amour propre. "This Society (The Medical Society), like many others, has become, from the increasing extent of the profession, too numerous in its members, and it has been alleged not so select at all times. From this cause, dissensions arose, but as good, at times, issues from apparent evil, it gave rise to the Medical and Chirurgical Society, a most elevated establishment, and which was formed purposely with a view to exclude the lower orders of the profession." And then follows the sop to Cerebus. "As the Medical Society, however, is the original parent of whatever future institutions may arise for medical improvement, so the founders of it may be said to have deserved well of the profession in general, as first, by their exertions, influence and talents, having set the machine in motion." In 1802 Sims made over his valuable collection of books to this Society, in consideration of an annuity of £30 a year to be paid to himself and his wife, and of £45 annually to the survivor. He retired to Bath a rich man and died there in 1820.

The eleventh President of this Society, George Pinckard, is the first to have served with the Forces of the Crown on active service. Born in 1768 he studied medicine at the then united Hospital of St. Thomas's and Guy's, then at Edinburgh, finally graduating at Leyden in 1792. In 1795 he was appointed physician to the Forces, and in that capacity accompanied Sir Ralph Abercromby's expedition to the West Indies. In 1798 he was in Ireland, and served in the rebellion of that year on the staff of General Hulse. For these services he was promoted to the rank of Deputy Inspector General of Hospitals, and was jointly responsible for the direction of the Medical Department of the Army in the Duke of York's expedition to the Helder. He founded the Bloomsbury Dispensary, and was physician to it for 30 years. He died with tragic suddenness from angina pectoris while examining a patient in his consulting room.

Joseph Adams occupied the Presidential Chair in the year of Lettsom's death. He was the son of an apothecary in Basinghall-street, and attended lectures under Pott at St. Bartholomew's, Saunders at Guy's, and John Hunter at St. George's. He took his degree at Aberdeen in 1796. He is chiefly known as a warm admirer and defender of John Hunter, and published in 1816 "Memoirs of the Life and Doctrines of the late John Hunter, Esq."

These, then, are some of Lettsom's contemporaries. Each in his way has had some part in moulding our practice of to-day. Anatole France says "It is the greatest of frivolities to waste time in cemeteries." But surely the contemplation of the lives and the study of the works of those who have gone before and left an indelible mark upon our profession in the past, are things that none of us can despise. For, as Andrew Lang has said, "The little present must not be allowed wholly to elbow the great past out of view."

A CHILD WELFARE FILM.

A PROPAGANDA film with the title "H.M. the Baby," produced for the Mutual Property Insurance Company by Community Interest Films, Ltd., was shown at the American Theatre, Wardour-street, on Oct. 12th. The story deals with the marriage of a young couple, in spite of opposition by the girl's father, who refuses to receive her or her husband. The young mother attends an antenatal clinic and goes for her confinement to a maternity home, the scenes for this part being staged at Queen Mary's Maternity Home, Hampstead. Eventually the father is reconciled when his grandson, under the guidance of health visitor and infant welfare centre, wins the first prize at a baby show. The film is approved by the Central Council for Health Education, and the intention is to lend it to medical officers of health and other authorities interested in health education.

A NON-PAYING PATIENT.

To the Editor of THE LANCET.

SIR,—For the benefit of my colleagues, both in consulting and general practice, I should like to call attention to the fact that there is abroad in London an individual, whose signs and symptoms are interesting enough to engage attention, but whose bank account is non-existent. She is about 40, short, plump, dark, blue eyes, slight moustache, and the history is one of radical mastoids and a severe intracranial operation on the right side. The signs bear this out, showing, in addition, an hysterical hemiparesis and hemianæsthesia on the right side. Unless they felt repaid by the interest in an amusing case, medical people would be wise not to waste their time or risk their money over her.

I am, Sir, yours faithfully,

Edgware-road, W. Oct. 9th, 1929. H. I. DAVIES.

ADHESIVE BANDAGES AND DRESSINGS.

Messrs. T. J. Smith and Nephew, Ltd., Neptune-street, Hull, and London, Glasgow, and Manchester, have called our attention to "Elastoplast" adhesive dressings and bandages, whose chief feature is that they are easily moulded to the shape of the surface to which they are applied, and that they are non-irritant. The fabric base of "elastoplast" is so woven that it stretches in any direction and the material is available in sizes suitable for various purposes, such as the treatment of varicose veins, the replacement of splints when less rigidity is required, and the dressing of fingers, eyes, and boils. From the fabric, sold in spools, dressings may be cut to meet any emergency. It is obtainable in two styles: in "A" one side is entirely covered with adhesive which allows the patient to take a bath without removing the dressing; in "B" the material is covered with adhesive in strips so as to allow of ventilation. Elastoplast makes a convenient and time-saving addition to the resources of the surgery.

MEDICAL GOLFING SOCIETY.—The autumn meeting of this Society was held at Deal in the Royal Cinque Ports Golf Course on Oct. 12th and 13th, and was attended by over 70 members. The weather was delightful and the course in admirable order. The Selling Sweep Dinner was held at the South-Eastern Hotel where nearly all the members stayed. The competition results were as follows: Singles *v.* Bogey won by Claud Apperley, 2 up, after a four-fold tie with Sir Milsom Rees, G. F. Wilson, and J. Pringle; Foursomes *v.* Bogey won by J. Pringle and J. Collins, all square; and Canny Ryall Cup won by C. V. Mackay (84−12=72), A. Galletly (76), D. A. Davies and C. Max Page (77).

TRAINING OF MIDWIVES.—In the course of a published statement on the report of the Departmental Committee on the Training of Midwives (see THE LANCET, Sept. 28th, pp. 669 and 680), the Council of the Midwives' Institute says that it "views with surprise and strong disapproval the suggestion that the control of the training and curriculum for the profession should be taken over by a Government department, thus eliminating the principle of self-government and self-development from a professional point of view that is accorded to all other professions. And considers that the withdrawal of control from a specialised body on which organised midwives have definite representation and powers would lower the standard of the profession and lessen its attraction for the most suitable women to undertake the serious and responsible part in the struggle against maternal mortality assigned to midwives by the Departmental Committee."

An Address

ON THE

FUTURE OF OBSTETRICAL PRACTICE.

Being the Presidential Address delivered before the Obstetrical Section of the Third Australasian Medical Congress, at Sydney on Sept. 5th, 1929,

BY HENRY JELLETT, M.D. DUB., F.R.C.P. IREL.,

PRESIDENT OF THE SECTION; CONSULTING OBSTETRICIAN TO THE HEALTH DEPARTMENT OF NEW ZEALAND; FORMERLY MASTER OF THE ROTUNDA HOSPITAL.

THE art of midwifery has passed through many stages. Originally it may be assumed that women delivered themselves of their children, as do wild animals, and with as little danger to themselves. Gradually, occasional difficulties introduced themselves, and in response to them elementary methods of assistance were devised. Difficulties increased, and methods of assistance became more developed. Greater use was made of the methods evolved, and, as a result, new difficulties and dangers appeared. Human life became more complicated, its relations more crowded and artificial, and pre-existing disease became more common. The mechanical complications of labour became greater and the need for assistance more frequent. To the ordinary risks were added risks of blood infections brought by those whose object was to assist, with the probable result that efforts, made to reduce the risk of labour, instead multiplied that risk. There can be little doubt that maternal mortality before the time of Semmelweiss was considerably greater than it would have been if every woman had been left unaided. There is even a certain element of possibility that, in the case of the healthy woman, this is still so. In the past interference during labour was limited, and asepsis was unknown. In the present, interference is frequent and asepsis is occasional. In the future, if the rate of maternal mortality is to be brought to the minimum, it will be necessary to reverse this relationship. Interference must so far as possible be avoided, and asepsis must be positive.

THE ESSENTIAL AIMS OF MIDWIFERY.

The art of midwifery has been devised with three aims before it, and it is being slowly perfected. The first is to bring a mother safely through a normal pregnancy, labour, and puerperium. The second is to ensure the delivery of a healthy infant. The third is to leave the mother in as normal a condition at the end of the puerperium as she was at the beginning of the pregnancy. Similarly, there are three basic essentials on which this art is built—knowledge, skill, and suitable environment. Knowledge is necessary to avoid both complications and interference, and to treat the one and to regulate the other should it become inevitable. Skill is necessary to obtain the fruits of knowledge. Suitable environment, by which I mean the circumstances under which a labour takes place, is necessary in order that the normal and abnormal events of labour may be conducted in an orderly and aseptic manner.

If these three essentials can be obtained, then the risks of childbirth will be reduced to their lowest. If they are absent, or if the possession of a due share of one is allowed to count as an equivalent to the absence of another, then the whole structure falls. Under such circumstances, as I have already suggested, it is quite possible that, so far as the rate of mortality is concerned, humanity as a whole would be just as well off without it, although individuals might still benefit.

Are these essentials obtainable? I think they are, at any rate to a much greater extent than is the case at present. But, before we shall get them, it will be necessary to throw aside a number of hampering ideas. The position of midwifery in the curriculum of the student, if judged by after consequences, is not and cannot remain inferior to that of medicine or surgery. Even if in the past the medical quack ranked before the surgical barber, and both before the "midwife"—male or female, the fact remains that to-day the badly taught "midwife" can kill more than the highly educated physician can cure, and that a good working knowledge of the art of surgery does not always make the surgeon more successful. If actual results are to be the criterion of relative importance, then I venture to suggest that the results of the obstetrical art, properly practised, are at least as important, though less brilliant, than those of medicine and surgery.

Then there is the public ignorance of the essentials of midwifery—an ignorance which takes many forms. There is one form which places the presence of a medical practitioner and prompt action before everything else, and which drives the practitioner into acts repellant to him. There is another form which decries the efforts of the practitioner to obtain an environment that will make asepsis possible, and which grudges the small incidental expense necessary. There is another form which considers that a medical practitioner is well paid for his skill, his time, and his assistance during pregnancy and labour, by a fee far lower than would be paid for a minor operation of general surgery.

It is popular to speak and to write as if medical science sprang yearly from one step to another, and that each step formed a permanent and desirable advance towards the top storey of knowledge. This may be so in medicine, but it is not the case in the art of midwifery. It is now just 30 years since the first edition of my small midwifery was published. It contained the teachings of Sir William Smyly. It contained the statistics of the Rotunda Hospital during his and during the first year of Dr. Purefoy's Mastership. It is of interest to note their treatment of the major complications of pregnancy and labour—sepsis, hæmorrhages, eclampsia—and to examine their results.

The aseptic technique of Sir William Smyly was far ahead of that of the average private hospital of the present day. The treatment of puerperal infection was no more unsatisfactory. The treatment of the hæmorrhages of pregnancy and labour was practically identical with that which is now generally accepted, although at the time students were threatened with rejection at their examination if they mentioned it! The treatment of eclampsia had not been placed on the firm basis on which Tweedy and Stroganoff have since placed it, but it was superior to that too often adopted to-day in private practice.

As for the general results, the following figures will show them. During the five years ending 1898, 7068 women were confined in the hospital. The total mortality was 22—that is, at the rate of 3·1 per 1000, including abortions.

Candidly, if we exclude the recognition of the necessity for a more rigid aseptic technique, I do not know of any very marked advance since the time to which I allude except the introduction of antenatal care. We seem to run after methods—principally operative methods, and to neglect men—and women. We are eternally looking for new advances—advances that must be built on knowledge, and neglecting the foundation on which that knowledge must be built. We create hospitals which make interference with normal labour easy, and we neglect the essentials which make interference safe, and the teaching which makes it unnecessary. We make medical practitioners and midwives, but we fail to provide them with a sufficient knowledge of midwifery. If it is true that in countries other than the British Empire, and even in some parts of the British Empire, the recognition of correct principles and practices has solved the question at which we stumble, then let us not rest content until they have become the principles and practices of the British Empire. The present system of caring for the pregnant and the lying-in woman is essentially

wrong; I propose to show that by the adoption of a different system it is possible roughly to halve the present rate of maternal mortality.

Cardinal Factors in Control of Mortality.

I wish to draw your attention to certain factors in the management of maternity, the connexion of which with maternal mortality is so obvious that I think it is permissible to regard them as the cardinal factors which control the rate of that mortality. The first of these is the nature of what, for the sake of convenience, I shall call the midwifery attendant, that is, the person who is directly responsible, either in part or in whole, for the care of the pregnant and lying-in woman. The second is the skill and knowledge possessed by that attendant. The third is the degree of antenatal care and antenatal diagnosis which each woman receives. The fourth is her environment during labour.

If we could go back several centuries and examine the history of maternity at that time we should probably find that none of these things received any practical attention or even recognition. Further, we should probably find that while the mortality accompanying normal pregnancy and labour was very low, the mortality accompanying abnormal pregnancy and labour was very high. If, however, we go back only 50 years or so and again examine we shall find that, while some importance was attached to the nature of the midwifery attendant and to the degree of skill and knowledge possessed by him, little attention was paid to antenatal care or to the environment of the patient. The maternal mortality of the period was probably far higher in the case of the normal woman than it has been several centuries before, while in the case of the abnormal woman it was certainly far less. Finally, if we take the present time, we shall find that, while full recognition is given in theory to all four factors, in practice they are either erroneously interpreted or overlooked, and that the resulting mortality in both types of case is probably very similar to what it was 50 years before. In fact, I am afraid that an unprejudiced investigator, with all the facts before him, would be driven to the conclusion that the basis of modern midwifery practice was as unstable as it had ever been, and that the edifice reared on it was so shaky as to be unsafe.

The Present System of Maternal Care.

What is this edifice? Broadly I may put it something like this. A woman discovers she is pregnant. She discusses the matter with her friends, who advise her to do diverse things. After an interval of some months she interviews a medical practitioner and engages him for her confinement. It is the only part of the whole procedure with which she thinks he is concerned. He writes down her name and the probable date of her confinement. He perhaps recommends a nurse, only to find that she has already engaged one. Patient and doctor mutually forget each other's existence until about the onset of the second stage of labour, or, in a primipara, perhaps later. The doctor is then summoned. If immediate delivery is not imminent, he is expected to produce it by the usual means, and often does so. He visits the patient during the puerperium and then leaves her. Finally, he is paid a fee which, while it may have some relation to the services rendered, has no relation whatever to services which ought to have been rendered.

There are a few more details to be added. The education of the practitioner in obstetrical matters may have been sound and thorough. On the other hand, it is likely to have been so cramped by the exigencies of the other parts of his medical curriculum as to bear no relation to the responsibilities he has got to discharge. Similarly, the education of the nurse may have been sufficient. On the other hand, it may have been so incomplete as to make it unsafe to trust her even with the sterilisation of the practitioner's instruments. The environment of the patient during labour, by which I mean the various conditions which render the carrying out of asepsis and the prompt treatment of obstetrical emergencies possible or impossible, may be as good as those surrounding a minor surgical operation, or so bad that no one with a surgical conscience would care to attempt one.

Everyone—patient, relations, nurse, and doctor—may be in haste, and the chance of a normal labour reaching a normal termination be very small. Further, the practitioner, through no fault of his, may have been obliged to come directly to his patient from a case of a septic nature. The puerperium follows, and the patient lies in bed for perhaps 8, 10, 14 days, or even for longer. Her active movements are often discouraged, and the idea of her leaving bed is sometimes viewed with horror. Finally, there is no effective postnatal examination or care.

Is my description exaggerated? Let me put the matter in the form of question and answer.

What is the chief essential in the management of normal pregnancy and in the prevention of abnormal pregnancy?—I answer—antenatal care.

What are the chief essentials in the management of normal labour?—Absence of haste and asepsis.

What is the chief essential in the prevention of abnormal labour?—Antenatal diagnosis.

What are the chief essentials in the treatment of abnormal labour?—Asepsis and operative facilities.

Are these essentials usually present in the average case of maternity as conducted in the present time?—I do not think they are.

Hence my opinion that the cardinal factors which control maternal mortality are erroneously interpreted, and that, this being so, the present system of caring for the puerperal woman is wrong.

A Comparison of Results.

I want to bring to your notice certain statistics which show the relative rates of maternal mortality in different parts of the world, and in one section of these parts. In each case the figures cover a period of six years ending 1927.

Countries.	Number of live births.	Total deaths.	Death-rate per 1000 live births.
Great Britain, Ireland, Australia, New Zealand	6,050,532	26,506	4·22
Australia	676,599	3,522	5·21
New Zealand	169,494	821	4·87
Holland and the Scandinavian countries ..	2,064,526	5,220	2·53
Holland alone	1,081,096	2,809	2·59
Queen Victoria's Jubilee Institute	317,758 (labour)	524	1·41

It will be seen at a glance that these figures fall into two groups. There is first a group in which the death-rate is relatively high, and which includes both all that area of the British Empire which I am considering, and also its component parts. Secondly, there is a group in which the death-rate is markedly lower. It includes Holland and the Scandinavian countries. As a connecting link between the two, and as a proof that the cause of the difference is not racial, I add the statistics of a sub-group of the British Empire, which shows a very low mortality. If the views I have expressed above are correct, we should find that the practice of obstetrics in Holland and the Scandinavian countries rests on a wholly different basis to that on which it rests in the British Empire.

Analysis of the Four Factors.

I now propose to analyse the differences which exist between the two groups in respect of the four cardinal factors that control maternal mortality.

1. *The Nature of the Midwifery Attendant.*

I think I am right in saying that, in the British Empire, as I have limited it, the majority of women are attended in labour by medical practitioners. In Holland and the Scandinavian countries, and under

the care of the Queen Victoria's Jubilee Institute, all normal cases of labour are attended by midwives. Here, then, is a very marked difference. Is it a vital one? Personally I think that it is, and I will go into my reasons for so thinking. There are three types of midwifery attendant to whom the care of the normal lying-in woman can be entrusted—the obstetrical specialist, the general practitioner, and the midwife. If I am right in thinking that the chief essentials of the management of normal labour are asepsis and the avoidance of interference, the specialists and the midwife are in a better position than is the general practitioner. Both can give, or ought to be able to give, the necessary time and need not to be driven by the exigencies of general practice to shorten the labour to the injury of the patient. For the midwife it is, or ought to be, a matter of one patient at a time. For the specialist his fee is, or ought to be, sufficient to enable him to give all the time that is wanted.

The position of the general practitioner is different. In the day-time the demands of general practice press on him, as well as those of midwifery. At night he must get some sleep if he is to carry out his work. The natural and practically unavoidable result is that he comes to a case of midwifery in a hurry, and that the two essentials of midwifery—asepsis and the avoidance of interference—are crowded out. Again, he is in constant contact with infection of different kinds, and no matter how carefully he may try to remove its effects it is not always possible for him to do so. If the specialist comes into contact with infection in the course of gynæcological practice he can find a substitute to replace him temporarily. The specialist, however, we may put aside. The real issue is between the general practitioner and the midwife, and the midwife has neither the need nor the right to come into contact with outside infection, nor having done so, to attend another patient until she is again safe. The septic death-rate amongst over 300,000 patients of the Queen Victoria's Jubilee Institute was 0·33 per 1000, and in Holland it was 0·77 per 1000. During the same period in England and Wales it was 1·46 per 1000. In Australia it was 1·7. In Ireland it was 1·79. In New Zealand and in Scotland it was 1·82. That is to say, the septic death-rate amongst women mostly attended by the medical profession was from something more than four to something less than six times greater than amongst women attended wholly by nurses. This being so, it would seem to be apparent that on the grounds of freedom from sepsis alone the care of the normal woman by the midwife, as opposed to the practitioner, is clearly indicated. Further, it is obvious that the other dangers of pregnancy and of normal labour are not increased thereby, seeing that in Holland they account for 1·82 of the total mortality, and amongst the patients of the Queen Victoria's Jubilee Institute for 1·07, while in England and Wales they account for 2·5, and in Australia for 3·51.

Here, then, is a very marked difference between low mortality and high mortality countries in regard to my first cardinal factor—the nature of the medical attendant. Accordingly, I am going to suggest that the midwife is the proper person to conduct normal labours. To support this suggestion I give from the point of view of the patient the statistics I have already quoted. From the point of view of the medical profession I advance the further suggestion that, to comply with the legitimate demands of present-day midwifery and to accept its customary remuneration, means that the medical practitioner must be a philanthropist—not by wish but by compulsion, and not on occasions but all the time. Whether such an occupation is compatible with the financial and domestic necessities of a professional individual is for each individual to answer for himself. My own view is that, when the time comes that all normal cases are handed over to midwives, the medical practitioner will wonder how he stood for so long a servitude under which his night was converted into day, his work into toil, and his obstetrical conscience into a nightmare.

2. *The Degree of Skill and Knowledge Possessed by the Attendant.*

Here, again, we find the most striking differences between the practice of the British Empire and of Holland in regard to the education of both the student and the midwife. I will select for contrast the training of the medical student which prevailed at Otago University, New Zealand, up to the end of 1927 and the similar training at Utrecht University. In each case the total length of the medical course is six years.

In the *Otago* University the course is as follows:—Fifth year: Attendance on a course of 50 theoretical lectures. Fifth and sixth years: Attendance on at least 20 midwifery cases, of which at least four shall have been attended under proper supervision at a maternity hospital. Twelve attendances at the antenatal clinic. Attendance at the University Maternity Hospital, which has 16 beds, when called on for practical instruction in cases of difficult labour. Each student attends approximately six abnormal labours. Attendance on 12 clinical lectures delivered by the University tutor.

In the *Utrecht* University the course is as follows:—Second year: Two hours weekly of theoretical instruction in midwifery and demonstrations on the phantom. Third year: Three hours weekly of similar instruction. Fourth year: Ten hours weekly of similar instruction. The student then passes an examination in theoretical midwifery. Fifth and sixth years the work is as follows: Eight hours weekly of special instruction in practical obstetrics. Six-week dressership in the University Midwifery Hospital, of which two are spent in residence. One month as extern accoucheur working on the district. The standard of practical work is 50 antenatal examinations and 40 conductions (not attendances).

In the training of midwives a similar difference is apparent though it is not so marked. In New Zealand the course for women without general training is 16 months. In Holland it is three years. I select New Zealand for comparison because the facts are before me, and not because it serves to emphasise the differences. As a matter of fact its course for medical students was at that time, and probably still is, inferior to the corresponding course in Great Britain, owing to circumstances which are at present difficult to control. On the other hand, its training of midwives is considerably better than the average training of midwives as laid down by the Central Midwives Board of England and Wales. A similar remark applies to the nurses of the Queen Victoria's Jubilee Institute who, so far as I understand, have all received a general training and who have received their midwifery training in recognised maternity hospitals.

The essential duties of the medical practitioner in maternity work are to be found in the prevention and treatment of obstetrical disease and anomaly. If his education does not fit him to discharge them, then his services towards the prevention of maternal mortality are very small. Further, if the management of normal cases is to be given to midwives, it is obvious that the present system which prevails in Great Britain, whereby one midwife can be almost wholly trained by another midwife, must become a thing of the past, and that even the more advanced training given in New Zealand is not sufficient.

3. *Antenatal Care and Diagnosis.*

This, again, is a factor of vital importance, and one which in regard to antenatal care is partly, and in regard to antenatal diagnosis is wholly, an essential duty of the medical profession. To emphasise this importance in the case of antenatal care it is only necessary to refer to its effect on the incidence of eclampsia. The patients of the Queen Victoria's Jubilee Institute receive antenatal care, and the mortality of eclampsia amongst them was 0·16 per 1000 deliveries. In New Zealand during the same period the mortality was 1·16 per 1000 live births.

Statistics of the work of a maternity hospital collected by Ray and laid before a Conference on Maternal Mortality and Morbidity in 1928 show that, before antenatal work was systematised, there were ten deaths from eclampsia amongst 16,565 patients. After it was systematised there was one death from

eclampsia amongst 13,067 patients. At the East End Maternity Home amongst 4173 patients there was not a single case of eclampsia. On the other hand, the attendances at the antenatal clinic numbered 11,881.

The only positive figures which I can place before you to show the effect of antenatal diagnosis on the prevention and prognosis of difficult labour are as follows. In England and Wales the death-rate from the " other accidents of labour " and from hæmorrhage was in the statistics from which I have already quoted 0·96 per 1000 live births, in Australia it was 1·22, in New Zealand it was 0·98. The corresponding death-rate amongst the patients of the Queen Victoria's Jubilee Institute was 0·33 per 1000 labours. That is to say, it was approximately a third of that of England and Wales and of New Zealand, and slightly more than a fourth that of Australia. I think that if you will recall the appalling consequences of undiagnosed and improperly treated contracted pelvis and particularly of the minor degrees of contraction, with its sequelæ failed forceps, failed craniotomy, delayed Cæsarean section, and septic infection, you will be able to estimate the effect of careful antenatal diagnosis yourself.

I have already suggested that the medical profession should give up the care of normal labour to midwives. I now suggest that they should replace this irksome and in every sense of the word unprofitable task by careful antenatal care and diagnosis, effective assistance in abnormal labour, and sufficient postnatal care. I quite recognise that many practitioners are trying and have tried for some years to give such care, in spite of the fact that the considerably increased demand it makes on their time goes unrewarded. Still the fact remains that, whereas in Holland every mother comes under the care of a medical practitioner during labour, in the British Empire it is only the minority who do so. Antenatal care and diagnosis is capable of removing almost completely the graver dangers of eclampsia and of obstructed labour by preventing the occurrence of the one and by the anticipation of the other. If it did nothing more than this it would probably reduce the maternal mortality-rate by something between 1 and 1·5 per 1000 births.

4. *Suitable Environment.*

I have explained what I intend to convey by this term—namely, everything which tends to promote the practice of asepsis, and which makes necessary intervention in obstetrical emergencies easily accomplished. I have no means of judging whether the environment of labour is better in Holland than in the British Empire, and so I will assume that it is the sole cardinal factor in which the practice of the two countries does not materially differ. Still its importance is such that I must discuss it. The value of suitable environment varies theoretically according to the circumstances and nature of the case. Thus, in a normal confinement normally managed in a private house, environment is possibly of small importance. Intervention is, and even vaginal examination may be, unnecessary. Consequently the risk of infection is small. In hospitals, public or private, environment is all-important on account of the increased risk of infection due to the presence of other patients. In abnormal cases, whether in private houses or in hospitals, environment is again all-important. So much in theory is probably right. In practice, however, seeing that unexpected complications may occur and necessitate intervention, suitable environment is always necessary.

The details of a suitable environment are all-important, but it is impossible to do more than touch on them. The aseptic environment must be such as to enable the labour to be carried out with the same degree of asepsis as is a surgical operation. It is strange that the truth of the fact is still unrecognised, and even contested, by so many people, and that it is possible to find a medical man removing tonsils in the morning with the strictest aseptic ritual and a placenta in the evening with none. Yet the removal of a placenta is possibly the operation most fraught with septic possibilities of any in the whole field of medicine. I am sure that the defence to this will be that the surroundings of an average case of labour make asepsis impossible. My reply is that we, as a profession, have had some 50 years at least in which to teach nurses and the public that these surroundings must be changed, and that we have not done so. Even at the present time, when a technique, which makes asepsis possible amidst bad surroundings, has been worked out in a satisfactory manner, medical practitioners are to be found who decry it as a useless and unnecessary expense and complication. Consequently environment does not improve, and the responsibility rests with us.

A very similar remark may be made regarding the environment which makes the treatment of obstetrical emergencies easy and safe. How many practitioners insist that the patient's room shall be so arranged that if, for example, postpartum hæmorrhage should occur, its treatment can be immediate and effective? I am almost afraid to ask the next question. How many practitioners carry with them the necessary appliances for its treatment, and prepare them beforehand so that they may be ready for an emergency? And yet the sole excuse for the presence of a medical practitioner during normal labour is that he is available for the treatment of the unforseen complication. Otherwise he is only an additional source of danger.

Again, the environment in private maternity hospitals is often no better than in a private home. And yet it is generally recognised that such hospitals are a danger rather than a benefit unless improved asepsis and general facilities more than compensate for the increased danger caused by the aggregation of patients.

Circumstances have made Labour Pathological.

Someone may suggest, as has been so often suggested before, that it is absurd to worry about environment, and to treat as pathological what is a normal physiological function. This is a confusion of ideas, and one which in the past has helped to increase maternal mortality. It is true that the process of labour under normal circumstances is a physiological one, but the circumstances which surround it in civilisation are so far from normal that it has become pathological. I ask the question in all seriousness: Is there a single incident in the management of normal labour which is not opposed to the physiological process of labour? Candidly I cannot discern one which is not opposed to it in some manner. Let me compare the course which I think Nature will prompt a woman to follow during labour with the course which civilisation has imposed on her. I fancy that a cave-dweller's labour was somewhat as follows.

The Cave-dweller's Labour.

The woman washes herself at a nearby spring or stream, and she walks about and does some of her daily work during the first stage. There is no hip-bath in which she sits, there are no examinations or other interferences. The second stage comes on. She squats during the pains in an attitude of defæcation, thus enlarging her pelvic outlet, and gaining the help of gravitation on the descent of the child, and effectively using her abdominal muscles. The child is born, and the cord is either divided or left while the woman, still in a squatty position, expels the placenta. There is no question here of vaginal retention. If there is any delay, she hugs tightly a large stone, using it, together with her voluntary efforts as a means of increasing intra-abdominal pressure. Then she probably lies down for a time, shortly to get up again to make the cave equivalent of a cup of tea. During the puerperium she is mostly on her feet. There is free drainage from the vagina, and when she suckles her child, uterine action expels the lochia from the uterus. Her posture during labour and the puerperium causes a flow from the uterus

he vagina and thence externally. There is no pportunity for its reversal, and the aspiration of luids from the vulva and the vagina cannot occur.

Civilised Labour.

The labour of her sister in civilisation is a very ifferent matter. She enters a nursing home for her onfinement, and begins her opportunities of infection y sitting in water in a bath which has just been used y another patient. Her vaginal orifice is somewhat atulous and water enters freely. She is then examined aginally to see that all is normal, and later, perhaps second or third time, to see if the doctor must be ent for. She has been sent to bed early in the first tage, and her position and mental anxiety make abour tedious. The nurse thinks it is getting too low, so she presses on the fundus to try to hasten he expulsion of the child. The uterus is pressed own into the pelvis, and, when the pressure is relaxed, t rises again, and there is some vaginal aspiration hich sucks into the vagina any fluid lying near the rifice. Such fluid has been infected by an unsterilised wipe," and so more bacteria gain entrance.

The first stage continues, the patient is crying from ervousness and unrelieved pain, and so the medical ttendant is summoned. He examines again and inds nothing wrong, so he is wise enough to give her sedative and to wait. The moment, however, she omes into the second stage the forceps is applied. n a way she is a lucky woman, because it might have een applied during the first stage.

Where does the physiological process of labour ome into this radical mismanagement? To begin ith, civilisation forced the woman to have her baby n an abnormal attitude and in the confined circumtances of a nursing home, instead of in a normal ttitude in an open space. Then her nurse sent her o bed when Nature wanted her to walk about. Then er doctor extracted her baby with forceps, when he would have delivered it herself if she had been llowed. Lastly, he extracted the placenta when lature would have expelled it if the patient's attitude ad not prevented her. Then civilisation again made er lie on her back or side in bed, while the normal ischarges of the puerperium collected in the upper art of the vagina, and the septic organisms which ad entered found both a medium in which to develop nd an incubator to help development.

I submit that when a natural process has been iverted from the normal, to the extent that the abour of civilisation has been diverted from the abour of nature, it becomes to all intents and purposes a pathological process for which it is necessary to try continually to find new remedies, of which a erfect environment is one.

It is thus evident that current practice in regard to ree out of the four cardinal factors I have mentioned ffers markedly in the British Empire and in the oup of low mortality countries. It is also clear at so far as the Queen Victoria's Jubilee Institute concerned, the recognition of these factors is llowed by an even greater drop in maternal mortality an occurs in Holland.

Apparent Everyday Causes of Maternal Mortality.

I have certain definite ideas in regard both to the uses of maternal mortality and the ways by which can be prevented. They are the result of my perience during the last five years or so as obstetrical nsultant to the Health Department of New Zealand, d of the study of the writings of others on the bject both in Great Britain and in Australia. I press my indebtedness for both information and ggestion to Dame Janet Campbell and Dr. S. Fairbairn at home, to Dr. Marshall Allan and . Sydney Morris in Australia, and to Dr. Sydney len in New Zealand. I believe that the practical uses of an unduly high maternal mortality, that to say, the causes which are removable and whose removal will effect a marked reduction in such mortality, are as follows:

1. The conduction of normal labour by medical practitioners, because the latter of necessity bring to the case the dangerous elements of haste, of unnecessary interference, and of sepsis.

2. The insufficient medical education of both medical practitioners and midwives. In the case of the former the consequence is an insufficient skill to deal with the obstetrical diseases and difficulties which are their special province. In the case of the latter the consequences are an insufficient knowledge to enable them to appreciate the importance of and to practise a rigid aseptic technique, and, to a less degree, to make the general management of their patients inadequate.

3. The lack of due attention to antenatal care and antenatal diagnosis. The failure of the former results in unnecessary deaths from toxæmia, from pre-existing septic infection and from antepartum hæmorrhage. The failure of the latter results in unnecessary deaths from difficult labour and its sequelæ.

4. Unsuitable environment leading in maternity hospitals to deaths from septic infection acquired from other patients, and in private houses to deaths due to inability properly to treat obstetrical emergencies and to a less extent septic infection.

I trust no one will suggest that in expressing these opinions I am attacking the medical profession. If anyone should do so, my best answer is that, if so, I am attacking myself too. I am sure that, when I was Master of the Rotunda, the only one of the four causes which I have given above, and to which I attached sufficient importance, was the second—namely, adequate obstetrical education, and possibly also the fourth—suitable environment. The other aspects of the matter had not occurred to me, although they should have been obvious. I can only hope that soon they will represent the collective opinion of the medical profession.

The remedy suggests itself. Free the medical profession from what I have called the servitude of normal midwifery. Give the medical student sound and practical instruction in midwifery, and imbue him with the belief that one of his duties in life is to keep on adding to her knowledge. Teach the practitioner that his part in midwifery is antenatal care and diagnosis, the management of abnormal labour and of the abnormal puerperium, and postnatal care. Teach him, too, that amongst his patients he is an obstetrical parson, and that his text is the necessity for early medical advice and for suitable environment. Lastly, reform private maternity hospitals so that their environment may be that of a true hospital rather than of a lodging-house, or even of a private hotel.

I have quoted the statistics of the Queen Victoria's Jubilee Institute a number of times, and I will quote them once again. The total death-rate amongst its patients during a period of six years was two-fifths that of the obstetrical death-rate of the British Empire during the same period. If these figures are adjusted to make them more strictly comparable with official statistics, the death-rate per 1000 live births amongst the patients of the Institute was approximately one-third that of the Empire figures, while the unadjusted septic death-rate is less than one-third. Surely if an institution working amongst the poorer classes can attain this standard, the united efforts of the medical profession can do the same.

Summary of the Author's Views.

I propose to vary the usual procedure, and to allow someone else to write the summary for me. In 1925 Dr. Sydney Morris, senior medical officer of health for New South Wales, wrote in a prize essay as follows:

1. "What public opinion has not yet realised is that the civilised woman requires attention not only at the actual confinement, but also some considerable time antecedent to the latter. Provided that the woman can obtain the services of a competent midwife for the actual confinement and the puerperium, together with the advice and supervision of a careful practitioner during the later months of pregnancy and in any emergency during the actual labour,

most other conditions may be considered as relatively unimportant.

2. "When one has had the opportunity of investigating maternal deaths soon after the fatal issue, one cannot escape the conviction that a great many of them could have been avoided by competent attention to the patient or her condition or both prior to labour.

3. "The medical practitioner is frequently called in by the midwife owing to some emergency. He knows nothing of the patient or her previous condition and is compelled to undertake complicated obstetric operations at the last minute and under the most unfavourable conditions. Is it any wonder that such cases form quite a considerable proportion of those which are subsequently complicated by puerperal infection?

4. "Who is more apt to expedite the labour by instrumental means thereby increasing the potentiality of danger—the busy practitioner or the midwife with time to spare? Instrumental delivery involves anæsthesia, which is generally carried out in the absence of skilled assistance. During the operative manipulation the practitioner is frequently called upon to attend to the anæsthetic or some complication, and there is no time for subsequent sterilisation of his hands. Would such a practice be tolerated in any operating theatre? The shade of Lister would be expected to appear and point an accusing finger. Yet in dealing with a raw surface greater than any liable to be met with in any branch of operative surgery the greatest risks are assumed with equanimity.

5. 'Once it is allowed that forceps can be justified for the sake of expediting delivery either for the benefit of the doctor or to appease the clamour of the mother or her friends, the whole basis of natural midwifery vanishes.

6. "It is quite unusual for a woman to be thoroughly examined before her return home after the birth of her child. Nevertheless, it is very desirable that a thorough pelvic examination be made during the puerperium at some time prior to her return to ordinary life.

7. "Antenatal supervision will eventually be regarded as the key to success in preventive midwifery. Until such supervision is regarded by both doctor and patient as a first principle of midwifery, we shall not be able to bring about the reduction of maternal morbidity and mortality in those directions in which the latter are most preventable."

My own views have been formulated quite independently of Dr. Morris, although his were expressed first.

Perhaps the reason why our ideas correspond is to be found in the fact that in both cases these ideas are based on our actual experience of the present system of midwifery practice and of the consequences that flow from it.

A CASE OF SCHILDER'S DISEASE.

(ENCEPHALITIS PERIAXIALIS DIFFUSA.)

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AND

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Schilder's disease is now a definitely established, though rare, clinical entity. So far as we know, only between 20 and 30 cases have been recorded. It is for these reasons that we publish the following case.

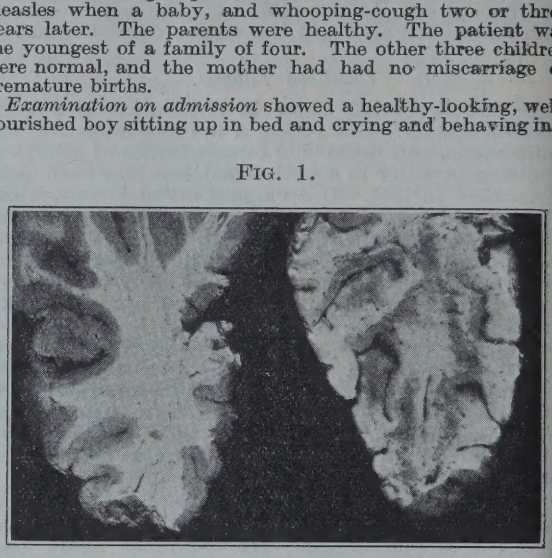
Clinical Observations by Dr. C. T. C. DE CRESPIGNY.

On Feb. 11th, 1928, a boy, aged 8 years, was admitted under my care to the Adelaide Children's Hospital. He was brought for treatment because for the last eight weeks he had been unable to walk properly, and during the same period it was noticed that he was becoming deaf. His speech, his mother said, had never been very distinct, but during the last two months it had become almost unintelligible. No impairment of intelligence had been observed but owing to his deafness he could not understand well.

His illness had come on so gradually that its onset could not be placed very accurately, but he had been normal until about two months previously. He was said to be clean in his habits, able to feed himself, and not noticeably clumsy with his hands. In other respects no disability had been noticed. His development, until the present illness began, had been normal. He began school at the age of 6, and seems to have shown an average aptitude for his work there. He had measles when a baby, and whooping-cough two or three years later. The parents were healthy. The patient was the youngest of a family of four. The other three children were normal, and the mother had had no miscarriage or premature births.

Examination on admission showed a healthy-looking, well nourished boy sitting up in bed and crying and behaving in a

FIG. 1.



The macroscopic appearance of Schilder's disease. On the left is a normal brain slice from the frontal region, while on the right a slice from the occipital region shows the brownish discoloration of the white matter.

fashion rather infantile for his age. His attempts to speak produced only a confused, unintelligible mumble. He was very deaf, but seemed to understand simple sentences when they were shouted loudly in his ear. He could feed himself and was quite clean in his habits. Apart from the deafness no defect was found in the cranial nerves. His pupils were equal and active in response to light and accommodation and the fundi were normal. Nystagmus and strabismus were absent. The face was mobile and symmetrical, and the tongue and palate were normal. The ear membranes were normal. The strength and coördination of the arms were not impaired, and the deep reflexes of the upper limbs were equal. His abdominal reflexes were present.

His gait was very unsteady and of the "sticky" spastic type. He walked with slight flexion of the knees, and he had a tendency, it was thought, to go towards the left. In the recumbent position he could perform all movements with his lower limbs. It was noticed that he held his great toe in a permanent position of dorsiflexion. The patellar and ankle-jerks were very active, but clonus was not present. Plantar reflexes showed definite dorsiflexion of the great toes increasing that already present. No abnormality of sensation was elicited, but this was difficult to determine owing to the patient's inability to coöperate.

Course of Illness.—His subsequent history is as follows. On Feb. 21st it was noted that there seemed to be no perception of sound either by air or bone conduction. The boy had a slight understanding of letters, but could not read well. By March 23rd hand movements had become less precise, and he fed himself only with difficulty. He tried to play with his toys, and was smiling and apparently happy. On the 31st a slight divergent strabismus of the right eye was present. By this time he had become quite silent, making no attempt to speak. By May 17th there was but little change. He had to be fed, but he ate well and slept well. He showed no signs of being able to see. On the morning of the 20th, however, he suddenly became very ill. Hitherto his temperature had been normal, his pulse regular, between 70 and 100 per minute, and his respirations about 20 per minute. Quite rapidly his pulse rose to 190, his temperature to 104° F., while respirations remained at 22. He regurgitated all fluids. The limbs became more spastic, and a spontaneous vertical nystagmus was present in both eyes. He died during the afternoon.

Special Examinations.—The blood Wassermann reaction was negative with the ice-box (Griffith and Scott) method (Feb. 17th). In the cerebro-spinal fluid a few cells were seen, mainly mononuclears. The globulin was slightly increased, there was reduction of Fehling's solution, and the chlorides were 750 mg. per 100 c.cm. The fluid was sterile in culture (Feb. 14th).

On Feb. 16th the ocular fundi were normal and there was no blurring or swelling of either disc. Both showed slight temporal pallor, but within physiological limits. On April 17th both discs were sharply defined, and there was no evidence of any swelling. Both showed temporal pallor slightly in excess of normal. On May 11th both maculæ were normal

Vestibular examination on Feb. 24th gave the following results with cold water:—Right ear: nystagmus began at 51″ and lasted 54″. Left ear: nystagmus began at 49″ and lasted 120″.

The following report was made following radiographic examination of the skull on Feb. 24th: "Frontal and sphenoidal sinuses undeveloped. The sella turcica is small. There is a thick bony wall with well-marked anterior and posterior clinoid processes. There is no evidence of erosion. No abnormality of the skull is evident."

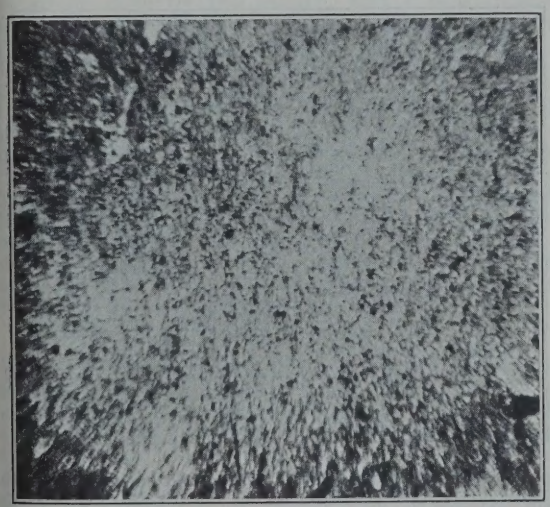
Summary and Commentary.

A previously healthy child of 8 years suffers from a progressive illness lasting between five and six months. Failure of hearing and spastic paraplegia are the first symptoms. Then there is rapidly increasing speech defect leading to complete dumbness. Sight is more gradually lost, and spastic paralysis increases in the lower limbs and extends to the upper. Finally, death occurs rather suddenly a few hours after the onset of acute symptoms of cerebral inflammatory type.

Post-mortem examination showed no abnormality except in the brain. The results of the pathological study of this organ are described by Prof. Woollard.

During life the recognition of the condition presented some difficulty. The diagnosis seemed to lie between a rapidly growing tumour of the brain and Schilder's disease. The chief arguments against the former were as follows: The signs and symptoms showed a very extensive and rapidly progressive lesion, but in spite of this there was none of the general signs of tumour. Headache, vomiting, and choked disc were absent, as were all other signs of increased intracranial pressure. The symmetry of distribution was in accord with recorded cases of Schilder's disease. The failure of hearing before that of sight had already been noted in a case recorded by Grainger Stewart, Greenfield,

FIG. 2.



Preparation stained by the Weigert-Pal method showing the demyelinisation of the fibres so that the white matter no longer takes the stain.

and Blandy[1] also, strangely enough, in a boy of 8 years. The subsequent blindness, unaccompanied by changes in the fundi, seemed to confirm the diagnosis.

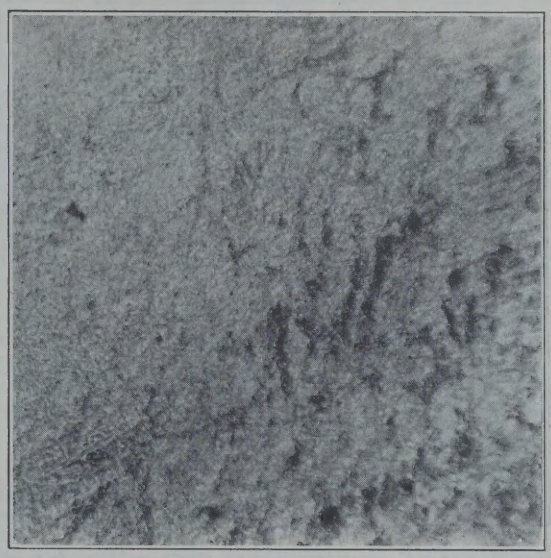
A good résumé of this disease appears in "Recent Advances in Neurology" by W. Russell Brain and E. B. Strauss[2] which includes a bibliography.

Pathological Notes by Prof. H. H. WOOLLARD.

It appears that 23 or more examples of this disease have now been collected. Of these the macroscopic examination of the brain has given a very similar picture in some 17. Microscopic analysis has been carried out in about six or seven, but this has naturally enough shown some divergence in detail though agreeing in essentials.

The present case of Dr. de Crespigny's was shown at a clinical meeting in Adelaide as a case of Schilder's

FIG. 3.



A high power view of the periphery of the demyelinised area. Weigert-Pal stain. Short irregular beaded fibres are seen.

disease, and it represents the first case discovered in Australia.

Macroscopic Features.

The brain presented no external evidence of disease. There was no vascular injection of the pia mater, the convolutions were neither engorged nor flattened, and there was no hydrocephalus or sign of increased intracranial pressure. When the brain was sectioned there was disclosed an alteration in the white matter of both hemispheres (see Fig. 1), including the posterior part of the corpus callosum. The change gave to the white matter a fused gelatinous appearance easily distinguished from the normal, the transition between the two being abrupt.

The affected area of white matter was situated for the most part above the level of a horizontal section that would have passed through the genu and splenium of the corpus callosum. This is in agreement with other cases described. The fused gelatinous appearance of the white matter extended symmetrically in both hemispheres and the corpus callosum in its posterior fourth presented a similar appearance. This involvement of the corpus callosum has not been mentioned in the cases whose descriptions are available to us. The areas of white matter involved are those of the occipital and temporal regions. After fixation the changed areas of white matter became brownish and friable. The crumbling of the material made section cutting difficult.

It is a striking feature that the cortex immediately adjacent to the gelatinous white matter appears to be normal and is separated from the diseased area by a thin band of normal white substance. In the occipital lobe it is easy to discern the stria of Gennari with the unaided eye.

All descriptions of the affected white substance agree on the following points. The disease is limited to the occipital and temporal regions of the cerebrum, the area affected is large and continuous and extends symmetrically in both hemispheres. The grey matter immediately adjacent to the affected white matter appears normal, and the passage from affected white matter to normal areas is abrupt.

[1] Brain, 1927, l., 1.
[2] London 1929, p. 328 et seq.

Microscopic Changes.

Degenerative Changes.—The process of demyelinisation is the characteristic feature of the disease. The disease is not truly periaxial, for it soon spreads beyond the medullary sheath and affects the axis-cylinders, which ultimately disappear.

The process of demyelinisation was examined by the Weigert-Pal method. It is complete in the centre of the affected white matter, but at its margin short, twisted, irregular disconnected beaded fibres can be seen (Figs. 2 and 3). This demyelinisation is the essential and constant feature of the disease and all the examinations so far made agree on this point. The axis-cylinders were investigated by means of the silver-staining method of Bielschowsky, and the same series of changes were found in them. They had disappeared from the central part of the affected white matter, but at the periphery short, irregular, wavy, and apparently broken bits of axis-cylinders were seen.

FIG. 4.

Preparation of the occipital cortex by iron hæmatoxylin. The cells are normal and radial myelinised fibres can be seen.

Preparations of the overlying cortex by the same methods showed the preservation of the radial and tangential fibres, and also of the band of white matter immediately adjacent to the grey and separating it from the demyelinised area. The contrast between the normal and abnormal elements is sharp and striking. The use of Nissl's method confirms the normal appearance of the grey matter. Cell type, stratification, and the individual features of the cells, the position of the nucleus, and the character of the Nissl granules are all normal (Fig. 4).

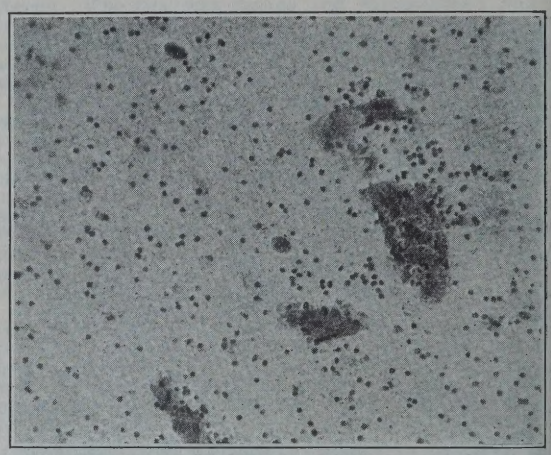
Inflammatory processes (see Fig. 5) are disclosed by sections stained with hæmatoxylin and eosin, by Weigert's iron hæmatoxylin and van Gieson, and by toluidine blue. In the neighbourhood of individual blood-vessels considerable accumulations of lymphocytic cells are seen. Such cells are also present in large numbers in the lumen of the vessel. The fibrous tissue of the adventitia has undergone some hypertrophy, and in the meshes of this the lymphocytic cells are abundant. Moreover, they extend for some distance from the vessels before becoming dispersed. The cells are predominantly lymphocytes, but a few plasma cells giving a metachromatic staining of their cytoplasm with toluidine blue are present. Besides these two types, larger cells, occasionally multinucleated, with abundant cytoplasm, often containing vacuoles and with Sudan III. showing an accumulation of fat-staining material, are present. These are the cells called "globoid" by Collier and compound granular cells by Stewart and his collaborators. It appears to be generally believed that these larger cells are of glial origin, but the use of neuroglial stains in this investigation did not bear out this presumption, and it is possible that they are of vascular origin. The endothelium of the vessels in the area affected did not appear to have changed its character.

Staining for fat by Sudan III. showed a much more intense reaction than did normal brain tissue similarly treated. In the cytoplasm of the large macrophage cells just referred to grains of fat-staining substance were visible. Similar changes of an inflammatory nature have been reported for other cases of Schilder's disease examined microscopically.

The neuroglia was stained by l'Hermitte's method, using Victoria blue. Hortega's bromammonium silver carbonate method was also applied, but the results obtained were not very successful. As in normal tissue the most abundant type seen was the fibrillary astrocyte. Other types could also be identified, but it did not seem at all obvious that there had been any proliferative activity of the neuroglia. Comparing the results obtained by the Victoria blue method with those obtained in normal brain tissue by the same method, it is concluded that in this particular case the neuroglia showed no particular response.

The macroscopic limitations of the disease seem so precise, even the overlying cortex escaping the demyelinisation, it is rather surprising that Stewart and his collaborators should emphasise the involvement of the nervous system as a whole. Sections of the basal ganglia, the mid-brain, pons, medulla, and cerebellum were studied by some of the methods already mentioned. Such sections showed that the vascular reaction extended beyond the macroscopic limits of the disease. Lymphocytic infiltration was seen in the cerebellum and the pons, for instance. Here it was probably less intense. However, nerve tracts and nerve cells appeared normal. No extensive investigation was made of tract degeneration, but the result of such stains as iron hæmatoxylin showed nothing to suggest that there was any noticeable demyelinisation beyond the limits of the disease.

FIG. 5.



A preparation stained by hæmatoxylin and eosin showing the lymphocytic accumulations about the vessels. Also larger cells are visible.

Conclusions.

In general, the pathological investigation of this disease shows: (1) Degenerative changes leading to demyelinisation and ultimate destruction of the axis-cylinders and so to the phenomena of Wallerian degeneration. (2) Inflammatory reactions of the nature of perivascular lymphocytic accumulations. (3) An area of demyelinisation sharply delimited, and a perivascular infiltration which, however, extends beyond the demyelinised area to the brain-stem and cerebellum.

It is to be expected that variations in the clinical and pathological details will occur, but the conclusion seems inescapable, since the essential features are so constant and uniform, that we are dealing with a single disease with its own special ætiology.

THE THERAPEUTIC USES OF LUMINAL.*

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LUMINAL is a drug of comparatively recent introduction, and is especially valuable in the treatment of epilepsy. To obtain the best results, however, it must be rightly used, and its injudicious employment in epilepsy is attended by risks which may be serious. First, then, I want to define its use in epilepsy. Secondly, luminal has proved a valuable drug in the treatment of a number of other disorders, all of them common ones, and, therefore, it has a wide sphere of usefulness in general practice.

Pharmacology.

Luminal, or phenobarbital, is a derivative of veronal, obtained by substituting a phenyl for an ethyl radical. Luminal itself is practically insoluble in water, but the sodium salt, luminal sodium, is readily soluble. For a mixture it is necessary therefore to use luminal sodium, which is incompatible with ammonium salts, and hence with ammonium bromide, and also with acids. It is important that a solution of luminal sodium should be as fresh as possible, as the drug deteriorates in solution, and I have frequently noticed that hospital patients who attend for medicine only once in three weeks or a month have most of their attacks a day or two before their visit, by which time their luminal sodium solution obtained at the previous visit has deteriorated.

Luminal sodium, being readily soluble, can be given subcutaneously or intramuscularly in 20 per cent. solution. I shall discuss doses later, but as a maximum it is doubtful whether grs. 5 or 6 can safely be exceeded as a single dose by the mouth, and I have never found so large a dose necessary. Luminal sodium is slightly less potent than luminal.

The *ill-effects* of luminal fall into two groups, rashes and neurotoxic phenomena. (1) Rashes are probably due to idiosyncrasy, as they are rare and may occur with small doses. They may be erythematous resembling scarlatina, papular resembling urticaria or measles, or combine both forms. The commonest site is upon the arms. (2) Symptoms of poisoning with luminal are those common to sedative drugs. In mild cases headache, vertigo, lethargy, and impotence occur, while more severe cases are characterised by ataxia, mental confusion, circulatory failure, and coma.

Luminal in the Treatment of Epilepsy.

What can we expect from the use of luminal in epilepsy? Tylor Fox[1] has recorded the effects of treatment of 167 epileptics with luminal. He found that 30 per cent. showed permanent benefit, 31 per cent. temporary benefit, 33 per cent. were unchanged, and 6 per cent. were made worse. Included in the 30 per cent. showing permanent benefit were 5 per cent. who were completely freed from fits, probably permanently. Major attacks respond to luminal better than petit mal.

On the debit side the most important fact relates to withdrawing the drug. In about 50 per cent. of cases it was found that after being treated with luminal for a limited period the patients actually had more fits after the drug was stopped than before it was begun, and there is a risk that status epilepticus may supervene if luminal be suddenly withdrawn.

I would suggest the following rules for the use of luminal in epilepsy:—

(1) Begin treatment with bromide alone, and only add luminal when the fits are not controlled by grs. 30 of bromide a day.

(2) In this event give luminal, in addition to bromide, beginning with gr. ½ night and morning, and increasing up to grs. 3 a day.

(3) If preferred, the same doses of luminal sodium can be combined with bromide in the mixture. In this case the mixture should be freshly made, preferably once a week.

(4) When the fits are nocturnal the main, or even the only, dose, should be given at night—e.g., grs. 1 to 2—and when the fits are diurnal, in the morning as soon as the patient awakens.

(5) When the fits occur at regular intervals—e.g., at one stage of the menstrual cycle—it is still necessary to give luminal throughout the month, as otherwise the fit may be merely postponed a few days.

(6) If luminal is to be withdrawn, increase the dose of bromide; and warn the patient at the beginning of the treatment against stopping the drug without advice.

(7) Perseverance and regularity are the twin watchwords in the treatment of epilepsy. I tell my patients when they begin treatment that they may require medicine in some form until they have been free from fits for three years. Relapses and failures to respond to treatment are often due to irregular dosage or to suspending treatment when the patient has been free from attacks for a few weeks. If all patients were treated thoroughly from the very beginning I am confident that the results of treatment would be very much better than they are.

(8) Status epilepticus may be treated by 2-gr. doses of luminal sodium in 20 per cent. solution subcutaneously.

Convulsions of organic origin—for example, those due to intracranial tumour or cerebral arterio-sclerosis—respond to luminal as well as idiopathic epilepsy.

Other Uses of Luminal.

(1) *Migraine.*—The pathogenesis of migraine remains a mystery, but we can usefully recognise three factors concerned in the precipitation of the attack. The influence of diet indicates that a metabolic disturbance may play a part. F. G. Crookshank has emphasised the psychological factor, and pointed out that migraine commonly occurs in the highly conscientious introvert, who experiences great chagrin when he fails to attain to the high standard which he imposes upon himself. Probably it is the metabolic concomitants of this state of anxiety which render its possessors liable to migraine. Lastly, migraine is the outcome of a cerebral disturbance, the nature of which is obscure, but which is probably vasomotor in origin.

In treating migraine we may endeavour to deal with the metabolic factor by advising the patient to avoid articles of food which precipitate attacks, especially eggs, cream, chocolate, raw apples, and some forms of alcohol, and to take regular meals. Treating the patient's temperament is considerably more difficult, but we can point out to him the source of his mental stress, and restrain him from pursuing sport at the week-ends with the same ruthlessness with which he devotes himself to work. If, however, we can eliminate the cerebral response to these abnormalities, we may hope to abolish the attacks. It seems probable that this is the mode of action of luminal and the reason for its effectiveness in the treatment of migraine. It is usually sufficient to give ½ gr. doses night and morning for a few weeks, and then continue for a time the nocturnal dose. Very few patients fail to respond with a marked reduction of attacks, and many become almost completely free from headaches.

(2) *Insomnia.*—Luminal is an excellent soporific, and the small dosage required is a convenience; gr. 1 to grs. 1½ at bedtime are sufficient in most cases of insomnia to procure a good night's rest, and few patients complain of dullness the next day. Not all types of insomnia respond equally well to the same sedative. I have found luminal especially useful in two types of case: (1) depressed patients, and (2) patients with organic disease—for example, high blood pressure.

Insomnia is an important feature of the clinical picture in mild cases of the depressive psychosis, of which every practitioner meets a large number, and which are not always accurately differentiated from neurosis. The characteristic triad of symptoms of which these patients complain is depression, loss

* Being an address to members of the London Hospital post-graduate course on Oct. 16th.

[1] Fox, J. T.: THE LANCET, 1927, ii., 589.

of appetite, and insomnia. Mental retardation may be experienced, and often presents itself to the patient as a feeling that "the brain won't work," but in mild cases hallucinations and delusions are exceptional. There is often a history of previous attacks, followed by complete recovery, and sometimes a family history of more serious mental trouble. The relief of the insomnia is an important part of the treatment. Luminal is also effective in the treatment of insomnia associated with mental excitement, but larger doses, up to grs. 5, may then be required.

It is rash to say of any drug that it never gives rise to addiction, but it is very exceptional for luminal to do so. The risk of habit formation may be diminished in the neurotic patient with insomnia by letting him put the tablet by his bedside and take it only if he is not asleep half an hour after going to bed. After he has secured a few nights' sleep by means of the drug he will often fall asleep without its aid if he feels that it is readily available.

(3) *Aural vertigo* is a complex subject, upon which I can only touch lightly now. It is convenient to distinguish clinically two types of aural vertigo: (1) An acute type associated with an acute lesion of the internal ear, an acute labyrinthitis, sometimes secondary to middle-ear infection, acute or chronic, sometimes of undiscovered ætiology. (2) The second and commoner type is found in the patient who suffers from recurrent attacks of vertigo of varying severity associated usually with deafness and tinnitus. This is a heterogeneous group. Most cases have not had purulent otitis media, but the condition is usually secondary to blockage of the Eustachian canal, with deflected nasal septum, polyps, infected air sinuses, chronic catarrh, or dental infections.

In this second group luminal is an exceedingly valuable drug. I cannot remember a patient who was not greatly relieved by it, and in mild cases complete freedom from vertigo is often produced in a few days. I give ½-gr. doses three times a day at first, and later reduce the dose. Luminal, of course, does not remove the cause of the vertigo, which must be sought and treated by otological methods.

Luminal is an excellent vestibular sedative in conditions of acute labyrinthitis, and I have used it also for vertigo due to lesions of the vestibular tracts and centres—for example, in encephalitis lethargica and disseminated sclerosis. It is useful as a preventive of sea-sickness.

(4) *Pruritus.*—I owe my acquaintance with the antipruritic effects of luminal to Dr. W. J. O'Donovan. It is especially valuable in cutaneous affections in which a large neurotic factor plays a part, such as pruritus ani. Used in gr. ½ doses and combined with appropriate local treatment it greatly diminishes the pruritus and so helps to break the vicious circle in which scratching keeps up an abnormal and irritating state of the skin.

(5) *Miscellaneous Disorders.*—Luminal is also useful as a sedative in chorea, whooping-cough, and exophthalmic goitre, and other uses for it will, no doubt, suggest themselves.

ABOLITION OF LETTERS OF RECOMMENDATION.—The governors of the Norfolk and Norwich Hospital have abolished the use of letters of recommendation on the ground that 75 per cent. of the patients are members of the contributory scheme, and that others can be admitted almost automatically on the advice of their medical men.

A BANKERS' HOSPITAL TRUSTEE.—The original trustees of the Yorkshire Home for Chronic and Incurable Diseases at Harrogate, which was established in 1881, have long been dead, the trust deed has been lost, and no new trustees have been appointed. The resulting difficulty has now been removed by the appointment of the National Provincial Bank as trustee for an honorarium of 10*s.* per cent. The rules have, at the same time, been amended by substituting the word "resident" for "patient." The word "hospital" has been deleted at the request of the inmates, on the ground that, as the National Health Insurance does not pay benefits to patients in hospitals, they are in danger of being denied their rights.

TWO CASES OF
HUMAN INFECTION BY THE AMERICAN HOG-CHOLERA BACILLUS.

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AND

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WITHIN the salmonella series of types the porcine strains referred to as *Bacillus suipestifer* (*B. cholerae suis*, or hog-cholera bacilli) and the human strains to which—in flagrant disregard of its original usage—the term *B. paratyphosus* C has of recent years been variously applied, form a cluster of species with specially close serological affinities. The composition of this cluster has been the subject of numerous studies and one of us (White, 1926), piecing together and extending the work of others, concluded that these strains were divisible into four sharply-defined types (1) Eastern or Hirschfeld, (2) American *suipestifer*, (3) European *suipestifer*, and (4) Glässer-Voldagsen or Ferkeltyphus.

The main differential characters of these types are set out in Table I.

TABLE I.—*Differential Characters of Four Types.*

—	Fermentation of—				Production of H_2S.	Serological relations.	
	Mannite.	Dulcite.	Arabinose.	Rhamnose.		Specific phase.	Non-specific phase.
Eastern or Hirschfeld type	AG	AG	AG	—*	++	Closely similar.	(See below).
American *suipestifer* type..	AG	—	—	AG *or* —	—		
Ferkel typhus type—							
Glässer strains	—	—*	A(g)	A(g)	+		
Voldagsen ,,	—	—*	A(g)	A(g)	+	None.	
European *suipestifer* type..	AG	—*	—	AG	++		

Non-specific phases of American and Glässer strains are to all intents identical; European and Voldagsen strains differ there from only by lack of any trace of specific phase antigen. The non-specific phase of the Hirschfeld type differs definitely from all the above by its deficiency in certain antigenic components.

A = acid; G = gas; (g) indicates that small amounts of gas are produced by some strains; — = No fermentation or no H_2S produced; —* indicates regular or occasional late fermentation; + = H_2S formed.

While the Hirschfeld type is known only from typho-septic disease in man, and while the European *suipestifer* type has been repeatedly encountered as a cause of food-poisoning outbreaks and of isolated cases of paratyphoid, there appear to be only two records of isolation of the American *suipestifer* bacillus from human sources; these are due to Krumwiede, Provost, and Cooper (1922), who describe a small outbreak of food poisoning due to this form, and to Hicks (1927), who isolated the organism in Shanghai from the blood of a paratyphoid sufferer. Furthermore, up to the present time the American *suipestifer* bacillus has not been shown to occur in Europe; it did not appear among 37 porcine strains collected by one of us (P. B. W.) from England and the

continent; its known strongholds are America and Japan.

It is therefore of interest to record two cases in which the organism was isolated in this country and as an apparent cause of disease in man.

NABARRO AND WHITE'S CASE.

V. R., a girl aged 8 months, was brought to the Hospital for Sick Children, Great Ormond-street, on Dec. 2nd, 1926, with the history of having been ailing for the past two months and of having lost the use of the arms from the shoulder to the elbow, especially the right.

On examination the child was well developed, but rather pale. Both upper arms were held rigidly at the side of the chest, and there was generalised swelling of the shoulder region on both sides. The shoulders were tender to palpation, although gentle, passive movements did not seem to cause pain. Radiographic examination showed periosteal thickening at the outer side of the upper arm, and of both humeri, also a small area of rarefaction at the upper end of the left diaphysis, and doubtful erosion at the upper end of the right diaphysis. No other joints were swollen, and the child had no fever. The right shoulder-joint was aspirated and about 1 c.cm. of thin, turbid fluid removed. This was investigated and an organism of the salmonella group was isolated.

Agglutination Tests with the Patient's Serum.

Samples of blood were taken on the eighth and thirteenth days after admission to hospital and were tested for salmonella agglutinins. Oxford standard suspensions of *B. paratyphosus* B and *B. paratyphosus* C (presumably Hirschfeld's bacillus), and a suspension of the organism from the joint fluid were clumped on both occasions up to serum dilutions between 1000 and 2500; Oxford suspensions of paratyphoid A, Gaertner and "Mutton" (Aertrycke) type bacilli were not agglutinated at dilutions 25 and above. An absorption test showed that saturation of the serum with paratyphoid B bacilli did not appreciably reduce its titre for Hirschfeld's bacillus or for the patient's own organism; another suggested that Hirschfeld's bacillus was unable to exhaust the serum of agglutinins for the patient's strain.

Two years later (Dec. 17th, 1928), when the child was called up for examination, its serum still clumped paratyphoid C-*suipestifer* bacilli up to dilutions between 125 and 250.

Widal tests, made in March, 1927, with samples of blood from the parents of V. R. revealed no agglutinins for any salmonella tested.

Cultural and Serological Features of the Organism Isolated.

In morphology, in motility, in failure to produce indol, to liquefy gelatin, to clot milk, to attack lactose, saccharose, and salicin, and in its gaseous fermentation of glucose and mannite the organism presented the usual characters of the salmonella group. Arabinose and inosite were unfermented; acidity did not appear in dulcite peptone water till the third week of incubation; lead acetate added to broth cultures remained undarkened during 14 days. These peculiarities are together characteristic of the American *suipestifer* or hog-cholera type.

The organism was found to be a typical diphasic form, and agglutination tests performed with its specific and non-specific phases and the phase antisera of various salmonella types grouped the strain unequivocally with the bacilli of the paratyphoid C-*suipestifer* series of types.

A number of comparative absorption tests were carried out. The essential results may be summarised as follows:—

1. The specific phase of strain V. R. completely exhausted the specific phase antisera of two America *suipestifer* strains (titre reduced from 10,000 and 20,000 resp. to <100); it almost exhausted a specific phase Hirschfeld type serum (20,000 to 200).

2. The non-specific phase of strain V. R. completely exhausted the non-specific phase antisera of the same two American *suipestifer* strains (25,000 and 50,000 resp. to <100) and equally exhausted the high titre sera of two European *suipestifer* strains. Similarly applied to these sera the non-specific phase of Hirschfeld's bacillus left considerable agglutinins (1000–5000). Acting on a non-specific phase Hirschfeld type serum the non-specific phase of V. R. was almost as effective in removing agglutinins as the homologous Hirschfeld strain.

3. A mixed phase serum prepared against strain V. R. showed an homologous specific phase titre of 25,000. This was reduced to <100 by treatment of the serum with specific phase American *suipestifer* bacilli, to 250 by treatment with specific phase Hirschfeld bacilli, and was unaffected by saturation with European *suipestifer* bacilli. The non-specific phase titre of the same serum was 100,000. Heavy doses of non-specific phase American *suipestifer* and of European *suipestifer* bacilli reduced this titre to <200, but the corresponding phase of Hirschfeld's bacillus left well-marked non-specific phase agglutinins (titre 10,000).

In fine the strain V. R. was found to correspond exactly and exclusively with typical *suipestifer* strains from the United States. Incidentally it may be noted that another strain, "Cole," also isolated by one of us (D. N.) from a case of joint abscess in a child, was identified as a typical European *suipestifer* strain, adding yet another instance of human infection by this organism. It would seem that the European *suipestifer* bacillus is particularly apt to attack young children and occurs as frequently in localised disease as in generalised febrile infections and gastro-enteritic poisoning.

DYKE AND SCOTT'S CASE.

The patient, aged 20, a labourer, was admitted to the Wolverhampton and Staffordshire Hospital on June 20th, 1927, having been ill for four days.

The onset of his illness was said to have been sudden with generalised indefinite pain and deafness. There was no diarrhœa and no vomiting. Delirium appeared in 48 hours, at first intermittent, but on admission persistent. It was of a violent character, the patient crying aloud, struggling, and continually attempting to get out of bed. The temperature on admission was 103° F., pulse 116, and respirations 28. The abdomen was distended but soft; the spleen could not be felt. Except some crepitations at the apex of the right lung there were no abnormal physical signs.

The patient died in hospital five days after admission, the duration of the illness thus being nine days. Delirium persisted during the whole of his stay in hospital until the final coma; the temperature ranged between 103.5° and 101° F. except for a brief period on the fourth day when it fell to normal; the pulse ranged from 116 to 140 most of the time and rose to 160 shortly before death. The bowels were opened normally about once daily; stools were firm and well formed. The urine showed no albumin and no deposit on centrifugalisation. On the fourth day after admission a large purpuric area about the size of the palm of the hand appeared on the left flank.

Autopsy.

The morbid changes found were those characterising an acute infection. The heart muscle was soft and friable; there were no abnormalities of the valves. The serous cavities showed no free fluid, but small purpuric flecks were present on both parietal and visceral pleura and on the surface of the heart. The intestines appeared normal; the liver was pale and fatty; the kidney showed a most intense cloudy swelling, the capsule stripping readily; the spleen was moderately enlarged, dark red, and soft; the lungs showed congestion, but no consolidation; the tracheal mucous membrane was moderately inflamed; there were no macroscopic abnormalities in the brain.

Bacteriology.

A blood specimen was taken for culture on the third day after admission. This showed in 48 hours an abundant growth of a small Gram-negative motile bacillus which grew readily on all the ordinary laboratory media. Cultures from the heart blood and spleen post mortem yielded a similar micro-organism. Mice inoculated with cultures of this bacillus died in one to four days with septicæmia.

In view of the obscure nature of the illness the case was reported to the Ministry of Health, and the circumstances were then investigated locally by Dr. E. Wilkinson, one of the medical officers of the Ministry. Inquiry showed that there had been no cases of similar illness in the family of the patient

nor in the neighbourhood, and no possible source of infection has since been discovered.

Identification of B. suipestifer, Group I.—A culture of the bacillus isolated post mortem was received at the laboratory of the Ministry of Health on June 30th, 1927. In colony and culture it resembled a salmonella; it fermented glucose and mannite with production of acid and gas and left unattacked lactose, saccharose, and dulcite; it failed to produce blackening of lead acetate even after ten days' growth. Colonies were tested for agglutination with the sera prepared with various salmonella types. It was found that 80 per cent. of the colonies agglutinated with the "specific phase" sera of *B. paratyphosus* Hirschfeld and *B. suipestifer* Indiana 49, but not with the sera of other types. With various "group phase" sera 20 per cent. of the colonies agglutinated, such colonies giving no agglutination with "specific phase" salmonella sera. It was thus possible by direct serological examination of the colonies to report within 24 hours that the infection was due to a diphasic salmonella belonging to the *suipestifer*-paratyphosus C series. Since such a salmonella had not at that time been described as indigenous in England further serological work was undertaken to determine to which of the sub-types of the *suipestifer*-paratyphosus C series it belonged and especially to see if it was of the American sub-type not hitherto found in human infections. The matter was mentioned to Bruce White, who proposed that our Wolverhampton case should be published jointly with the similar case in London already investigated by Nabarro and himself.

Specific and group phase cultures of the Wolverhampton strain were used to produce agglutinating sera in rabbits (intravenous doses of 0·1 c.cm., 0·25 c.cm., 0·5 c.cm., and 1 c.cm. of chloroformed broth culture) and absorption experiments set up as shown in Table II.

TABLE II.—*Absorption Experiments*: (A) *Group Phase Antigen.* (B) *Specific Phase Antigen.*

Serum.	Absorbed by—	(A) Titre (group phase).	(B) Titre (specific (phase).
Para-C Hirschfeld	Wolverhampton	< 100	200
	B. suipestifer Indiana 49	< 100	200
	Unabsorbed	25,000	6,000
Wolverhampton	Para-C Hirschfeld ..	3,000	800
	B. suipestifer Indiana 49	< 100	< 100
	Unabsorbed	25,000	6,000

These absorption experiments were performed by emulsifying about 100 mg. of the moist growth from agar plates in 2 c.cm. of a 1 in 50 dilution of agglutinating serum. This quantity sufficed in each case to remove all the agglutinin when the homologous strain was used.

The experiments show that the group-phase of the Wolverhampton strain and of the American *B. suipestifer* Indiana 49 removes all the group-agglutinin from the Hirschfeld serum. The group-phase of the *B. paratyphosus* C strain (Hirschfeld) leaves a considerable proportion of the agglutinin in the Wolverhampton group-phase serum, whereas from the latter serum the American *suipestifer* removes the agglutinin entirely. The specific phase of both Wolverhampton and Indiana 49 removes a large proportion of the specific agglutinin in the paratyphosus C serum, but leaves a small fraction unaffected, and the specific phase of *B. paratyphosus* C, while absorbing a considerable amount of the specific agglutinin from the Wolverhampton serum, leaves a fair proportion uncombined, although the American *suipestifer* removes it completely. Other absorption experiments show: (1) that the specific agglutinin for the American *suipestifer* Indiana 49 can be completely removed by the specific phase of the Wolverhampton strain; and (2) that a group II, "European," *suipestifer* leaves uncombined only the small proportion of specific agglutinin in a group phase Wolverhampton serum. This was shown by Bruce White (1926) to be characteristic of the relationship between group I. and group II. *suipestifers*. (The European *suipestifer* employed was that obtained in the outbreak of gastro-enteritis at Offenbach in 1926 and described by Braun and Mündel (1927).

It is interesting to note that the conclusion arrived at by serological analysis—namely, that the Wolverhampton bacillus is a group I. or American *suipestifer*, is in agreement with the cultural indications, the absence of dulcite fermentation, and the failure to blacken lead acetate being characteristic of the American strains of *suipestifer* as contrasted with *B. paratyphosus* C of oriental origin.

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THE TREATMENT OF PURULENT PLEURISY BY PLEUROTOMY AND BALNEOTHERAPY.*

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THE evacuation of pus from the pleural cavity is best attained by making a complete opening under local anæsthesia in an intercostal space along the posterior axillary line of the side affected. The superficial incision can be made anywhere, but the patient is transferred to a bath for the purpose of deepening the incision under water, the temperature of the bath being 104°–108·6° F.

Technique of Treatment.

The bath is flamed and filled to a convenient level, and the patient is washed down with soap and water. He sits in the bath so that the water covers the superficial incision, which is then deepened until pus is found. The edges of the wound are held apart by large forceps like sinus forceps. This brings about an interchange of pus and water, and greatly favours the expulsion of fibrinous exudations by respiratory impulse. The greatest possible quietness is maintained, and when the pleural lavage is considered sufficient the patient is lain down outside the bath; this brings about the expulsion of almost all the remaining fluid under respiratory impulse. A pad of sterilised cotton-wool is then placed over the wound and makes it a closed cavity. Under these conditions the surgical diaeresis performs the function of a valve which, by excess pressure, allows the intrapleural air to escape without admitting an equal amount; this promotes expansion of the lung.

Later treatment consists in repeating the bath after washing down, opening the wound fully by large forceps, and thereby promoting lavage of the pleural cavity. The duration, frequency, and temperature of the baths should be governed by the general condition. In serious toxic cases I advise two baths per diem, of five minutes' duration; in cases of medium intensity a daily bath of ten minutes suffices. According to his condition and stamina, the patient should get up and gain strength. The diet should be as nourishing as possible.

While the patient is in the bath it is interesting and very easy to discover if the empyema communicates with a bronchus. An adult is told to place his

* Translated from a paper read before the Surgical Congress at Buenos Aires, 1928.

hands over his mouth and blow through them as if warming his hands on a cold day, then to close his lips tightly, press firmly against them with his hands, and keep up the pressure of air in his respiratory passages. Should there be communication with a bronchus this air will escape from the wound and bubble into the water as often as the test is repeated—that is to say, to an indefinite extent. This repetition differentiates the air from gas which may have been formed by organisms or air which may have entered accidentally. The bubbling is exactly the same as if air were injected under water through a small tube. Infants cry, and so produce the same result. This manifestation, first observed by Dr. Enrique Foster while applying the treatment experimentally in his clinic for unweaned infants, is very important in prognosis. It indicates: (1) that the empyema springs from broncho-pneumonia, and (2) that it opposes the principle of treatment which endeavours to obtain a closed cavity. When the empyema communicates with a bronchial tube, the beneficial principle of a pneumothorax closed by a valve, such as is obtained in other forms of pleurisy, is not possible or is much impeded, inasmuch as the communicating bronchial tube, in all those efforts of the patient which are so useful for expanding the lung, injects air into the pleural cavity, counteracting the favourable results of the effort. Pleurisy with bronchial involvement is more intractable to treat and of longer duration than closed pleurisy.

Underlying Principles.

The hot bath has a very important effect on the general condition, for it brings about elimination of toxins by profuse perspiration and diuresis, and also by the neuro-nutritive stimulus of the bath; it improves appetite and makes the patients more active, thereby increasing their recuperative powers.

The advantage of this method is shown by the reduced period of treatment, which varies between 15 days in the most successful cases and two months. The work performed by Drs. Enrique Foster and Fernando Arancibia in the Children's Hospital shows that better results have been obtained with the bath than with other methods of treatment of empyema in unweaned infants. The peculiar gravity of empyema in unweaned children was taken as a test of the treatment.

The chief difficulty which the treatment has to overcome is the prejudice of the surgeons who, in accordance with the inflexibility of the teaching of asepsis, are antagonised by the lack of respect which this method shows for suppurating cavities, even when the rules of surgical cleanliness are meticulously observed. Nevertheless I venture to state that, no matter how much surprise the method may cause on account of its mode of operation, fundamentally it has not infringed any principle. What is obtained by asepsis in these cases is only relatively valuable compared with the process on which it acts. Taking as example a case of simple pneumococcic empyema, the standard procedure cannot avoid microbic contamination, to which the cavities are inevitably exposed by prolonged drainage. Asepsis can only prevent the penetration of germs of great virulence, which are kept remote from the wound more easily than the common germs living in immediate contact with it. It may be objected that the bath cure allows the common cutaneous germs to reach the suppurating cavity, but in fact it illustrates the benefit of hot water upon the general and local condition, and, at the expense of a certain concession in surgical conventions, gives the great advantages of operating with efficacy, simplicity, and ease.

Statistical Data.

My cases include the following:—

(1) Ten patients treated by me in the clinic of Dr. Marini: of eight adults, one died of pneumococcic meningitis, after being clinically cured of a fœtid pleurisy on the left side with bronchial involvement, which developed in two months; the other seven were cured. Of two children, one aged 4 years and the other aged 18 months, both were cured.

(2) Four cases treated by Dr. Nicasio Cuneo: two adults were cured, and two children, one aged 3 years and the other aged 5 years, with double pleurisy (the second occurring eight days after the operation for the first), were both cured.

(3) Thirty-nine cases treated in the Children's Hospital: of 15 over two years of age, 12 were cured and 3 died; of 24 under two years of age, 9 were cured and 15 died.

(4) One case treated by Dr. Foster in private practice, a child of 22 months, was cured.

Summarised, these figures are:—

Adults.—10: 9 cured, 1 died.
Children over two years.—15: 12 cured, 3 died.
Children under two years.—26: 11 cured, 15 died.

Statistics given by Drs. Foster and Arancibia on 72 cases of pleurisy in unweaned infants in the Children's Hospital, treated by different methods, show a percentage mortality as follows:—

	Mortality.
By minimum pleurotomy and drainage	90
By costal resection and drainage..	85
By puncture	65
By pleurotomy and bath cure	36

Conclusions.

(1) Unless a more extensive statistical study shows different results, it appears that purulent pleurisy is cured in greater proportion, in a shorter period, and with less difficulty by the bath than by any other method.

(2) When appreciating results we must remember that the great majority of cases of purulent pleurisy are complications of developing pulmonary affections.

PRINCIPLES IN THE TREATMENT OF COMMON DEFORMITIES.*

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ORTHOPÆDIC surgery is so closely associated with function that the patient is in an exceptionally good position to judge of the practical success or failure of what is done for him. Often perfect restoration of function is impossible, and it is therefore important that, before treatment is begun, the patient and parents should understand clearly how much improvement is to be expected; otherwise what we may consider a brilliant surgical success will to them be a disappointment.

Deformities are associated with changes in bones, joints or muscles, and their causes must be understood before the possibilities of cure can be assessed.

Causes of Deformity.

In *rickets* there is a deficiency of lime in the bone, and the softened bone readily adapts itself to posture; deformity is thus influenced by the incidence of body-weight. In *arthritis* the instinctive effort to prevent pain causes spasm of all muscles controlling the joint, and the stronger muscle groups determine the position in which the joint is fixed. The position of deformity in arthritis of any joint is therefore almost constant; it is adduction of the shoulder, flexion of the elbow and wrist, flexion and adduction of the hip, flexion of the knee and equinus deformity of the foot. So in *infantile paralysis* the deformity is determined by two factors: (1) persistent posture, and (2) the deflection of the joint towards the stronger group of muscles. These deformities once established will, as a rule, be aggravated by the incidence of body-weight. Early treatment by splintage would prevent their onset, but as a rule we see the patient when deformity is established, and the problem is the one of restoring

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function. The methods commonly adopted for this are: (1) gradual correction of the deformity; (2) forcible correction of the deformity; (3) surgical exposure with division of tight structures; and (4) operations on bone. In cases in which the loss of function is not associated with deformity, the possibilities of improvement by operations on joints or tendons must still be considered.

Restoration of Function.

Gradual correction of deformity is a method which was successfully employed before many of the operations at present practised were surgically safe, and we can assess the value of modern operative methods only if we have experienced the possibilities of correction of deformity by gradual splintage. It has been my good fortune to be trained in a school in which success in the application of the principles of gradual correction of deformity has been very striking. I have learned that nature resents tension and allows relaxation of structures to which it is constantly applied.

It is generally agreed that division or elongation of muscles reduce their power, so that methods of gradual correction of deformity have a definite advantage in dealing with ischæmic palsies and infantile paralysis where muscle power is already deficient. Again in deformities resulting from rickets there is seldom any indication for operation while the disease is active. In practically all children under the age of 4 the deformities can be corrected by splintage, while the necessary general treatment to harden the bones is being applied. Gradual correction is the method which can be applied in cases of arthritis of joints before the stage of true ankylosis. It is also the method of choice for the early treatment of congenital club-foot.

Forcible correction of deformity is mainly utilised for the correction of claw-foot in children and young adolescents. Considerable force is also necessary for the reduction of congenital dislocation of the hip-joints, and also in cases of club-foot in which treatment has been delayed.

Surgical division or elongation of tight structures, as a preliminary to correction of deformity, is usually necessary in cases of torticollis, and to weaken muscle groups which are causing deformity in cases of spastic paraplegia.

Operations on bones or joints may be required to correct alignment in cases of established deformity, or to improve function by arthrodesis—i.e., by promoting sound bony union of certain joints. These operations are perhaps the simplest and most satisfying both to the patient and surgeon. Those commonly practised are: osteotomy of the upper or lower end of the femur in cases of established rickety deformity; operation for malunion of fractures, or deformity resulting from arthritis; and arthrodesis. This last operation is of special value in certain cases of loss of function resulting from paralysis, for instance, in cases of loss of power in the deltoid with active scapular muscles a very useful range of controlled movement of the limb is possible if the humerus is arthrodesed to the scapula in a position of moderate abduction. The controlled movement of the scapula is then transmitted to the limb, and in young patients with good scapular muscles the range of movement is so good that it is often difficult to detect the original disability.

In cases of paralytic deformity of the foot removal of bone and arthodesis of joints has proved very valuable. On examining a paralytic deformity of the foot, clinically or by X rays, it will be noticed that deformity has taken place mainly at the mid-tarsal and subastragaloid joints, and that there is little alteration of the relation of the astragalus to the bones of the leg. The to-and-fro movement at the ankle-joint is the important one for locomotion.

In infantile paralysis we cannot restore power to the atrophied muscles, but by reducing the number of joints which depend on them for stability we not only prevent recurrence of deformity, but leave such muscle power as is present for control of flexion and extension of the ankle-joint. This operation is known as stabilisation of the foot, and it consists essentially of correction of deformity by removal of bone at the mid-tarsal and subastragaloid joints, with after treatment which ensures that the os calcis, astragalus, and fore part of the foot become united as one bone in a good weight-bearing position. Subsequent deformity at the mid-tarsal and subastragaloid joints is not then possible. This operation may be utilised in other types of fixed deformity of the foot, such as old-standing club-foot, or to relieve pain in cases of tarsal arthritis.

Tendon Transplantation and Tenodesis.

The late war gave many of us an extensive experience of tendon transplantation in the restoration of function. The causes of failure in many operations previously practised were understood, and certain procedures are now recognised as essential for success. These are: (1) That before operation correction of deformity should be complete. (2) That the transplanted muscle should run in a direct line from its origin to its new insertion. (3) That the muscle should be of sufficient power to meet the strain which would be imposed on it. (4) That in the lower extremity a tendon should only be used to replace one of its own group—i.e., one normally in action with it. (5) That the tendon should be sutured under considerable tension.

The re-education of an individual tendon to act apart from its group appears to be more practicable in the upper extremity, where the action of individual muscles is more specialised than in the leg. The movements employed in locomotion are simple and controlled by groups of muscles, so that it is difficult to re-educate a muscle to act apart from its own group. In cases of paralysis of the quadriceps muscle transplantation of the sartorius or tensor fascia femoris to the patella is found effective. In the foot there are for practical purposes only two groups of muscles—viz., the anterior tibial, in action in dorsiflexion of the foot, and the peroneal and posterior tibial associated in action with the tendo Achillis in plantar flexion. Any of the anterior muscles may successfully replace one another—e.g., the tibialis anticus may be successfully transplanted to the outer side of the dorsum of the foot in paralytic varus, or the extensor longus hallucis may be transposed to the tibialis anticus. On the other hand, no tendon transplanted from the peroneal or posterior tibial group will be effective in replacing the loss of active dorsiflexion. The posterior tibial and peroneal muscles form one group. All are in action in extension of the ankle, so that they may be used to replace one another with certainty of success. The successful use of these muscles to replace a paralysed tendo Achillis is a striking illustration of the group action of muscles in the control of the foot.

In the upper extremity certain tendon transplantations have proved most valuable in the restoration of function; thus in musculo-spiral paralysis we find that loss of extension of the wrist, fingers, and thumb can be surely replaced by transference of the pronator radii teres, flexor carpi radialis, and flexor carpi ulnaris to the extensors of the wrist, fingers, and thumb.

Tenodesis is a method of utilising paralysed tendons as ligaments so as to limit movement of joints. It consists of embedding the proximal portion of the tendon in bone, and its use may be illustrated by the anchoring of a portion of the tendo Achillis to the lower third of the tibia to prevent calcaneus deformity in cases of paralysis of this muscle.

Although I have dealt mainly with the correction of established deformity, it must be recognised that many of these can be prevented by early treatment. For this a knowledge of simple splintage is essential. Whether we are dealing with fractures, arthritis, rickets, or paralysis the type of deformity is almost constant and its cause must be understood. Its prevention or correction will then present little difficulty.

Clinical and Laboratory Notes.

IMPLANTATION OF EPITHELIOMA IN THE ALVEOLI OF THE MAXILLA FROM PRIMARY GROWTH IN TONGUE.

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THE following case seems to suggest that the extraction of diseased teeth as a preliminary to operation for epithelioma of the tongue may have unfortunate results.

A man, aged 50, came to the Northern Hospital complaining of an ulcer and soreness of the tongue. He gave a history of excessive smoking and of syphilis 23 years ago. He stated that six months before he had noticed a white patch, presumably leucoplakia, on his tongue. About three months ago the tongue became sore on the right side, and a month later an ulcer formed. Lately he had noticed that he was salivating excessively, especially at night, and that he had pain now and then at the angle of the jaw. During the last month he had difficulty in speech, and deglutition had caused pain at the angle of the right jaw.

Examination.—The man was well built and apparently healthy. The right side of the dorsum of the tongue was almost completely occupied by an ulcer, which extended from the right edge to near the middle line; it came forward almost to the tip of the tongue, and extended back and just on to the anterior pillar of the fauces. The edge was irregular and heaped up, and the base sloughy and friable. The left half of the tongue showed many patches of leucoplakia. Movement of the tongue was restricted, and on attempting to protrude the tongue it deviated to the right. Salivation was very marked, and was streaked with blood. The teeth were all deficient, except for the two upper right molars, which were jagged. Pyorrhœa was marked. The submaxillary glands were enlarged and hard on the right side; they were not attached to the jaw. Speech was a little indistinct.

Operation.—Pending operation, the man was transferred to the dental surgeon, who removed the two molar teeth. He was admitted on June 16th, 1927, about one week after the teeth had been removed. Owing to the sloughy condition of the tongue, it was decided to excise the tongue before removing the cervical glands. On June 17th I tied the right external carotid artery, and then with the diathermy excised the right half of the tongue, both pillars of the fauces, and the tonsil. Under anæsthesia it was found that the tongue was indurated very far back, well on to its base, so that the excision was a formidable task. The late Prof. E. E. Glynn reported: Typical squamous-celled carcinoma with many cell nests.

Sequel.—Convalescence was uneventful, in spite of the size of the raw area. The temperature never rose above 99° F., nor the pulse-rate above 90. During the first two weeks the submaxillary glands showed some inflammatory enlargement. On July 2nd he was allowed to go home on the understanding that he would return for removal of the cervical glands. For some reason he did not return till August 31st, when it was found that the glands had become slightly larger and harder. On examining the mouth it was found that the right side of the mouth had healed up completely, and there was no evidence of any local recurrence. On the left tonsil there was a small ulcer, half an inch in diameter, irregular, friable, and obviously malignant. It spread on to the soft palate, but did not involve the tongue or the anterior pillar of the fauces. The two sockets of the right upper molars which had been removed were filled with fungating masses which projected almost half an inch from the alveolar margin. Although touching, the two masses were quite distinct.

As the removal of the right half of the tongue had been so successful, it was decided to try to remove the recurrences. On Sept. 2nd I excised with the diathermy the masses in the tooth sockets, and diathermised the surrounding tissues. I then excised the left tonsil and fauces, the left half of the soft palate, and that part of the tongue in proximity to the tonsil. The pathologist's report on tonsillar and alveolar fragments was: squamous-celled carcinoma exactly similar to lingual growth.

As before, the man showed little after-effects from the operation, but the area took a long time to clean up. In the meantime the glands showed so much inflammatory reaction that it was considered inadvisable to attempt an immediate excision. About a month after operation the mouth was clean, but the glands were now so enlarged, and the toxic absorption had so devitalised the man that he was allowed to go home on Oct. 15th. His private doctor kindly kept me informed of his progress. The mouth improved steadily, and there was never any sign of recurrence, either in the scar or remotely, but the glandular condition went rapidly from bad to worse, and the man died in December.

SOME OBSERVATIONS ON GAS AND OXYGEN IN GENERAL SURGERY.

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IN November, 1928, gas and oxygen, administered through a McKesson machine, was instituted in this hospital. Since that date I have observed its effects on a series of 165 cases, from careful examination of which certain deductions can be drawn. I have been struck by the following points in all patients who have had gas and oxygen: (*a*) the comparative rarity of post-anæsthetic sickness; (*b*) the early demand for food; (*c*) the complete absence of post-operative chest complications except in two cases.

No matter what the type of case—a big abdominal or a simple appendix—the ruling-out of any tendency to post-anæsthetic sickness and chest trouble is a most important argument in favour of gas and oxygen in general surgery. I have had frequent opportunities of observing the condition of patients who have had gas and oxygen and those who have had chloroform and ether mixture or ether, and in all cases I found a most striking contrast in the immediate post-operative period. The climax of the contrast was in every case on the day following operation, and despite precisely similar surgical treatment the gas and oxygen case showed the following points:—

1. Appearance of well-being with no undue discomfort. The chloroform and ether or ether patient showed much more collapse with pale facies.

2. The blood pressure and pulse-rate readings of the gas and oxygen patient were identical with the readings taken before operation, whereas in the others the blood pressure in every case had decreased by 10 to 20 mm. Hg, while the pulse-rate was higher by as much as 25 to 30 beats per minute.

3. The gas and oxygen patients showed little tendency to vomit and in many cases vomiting was conspicuous by its absence, whereas the other patients had considerable trouble from frequent retching.

Two Cases with Lung Complications.

Only two patients had distressful vomiting, and these were the cases which showed signs of lung complications. Both were women who had had frequent attacks of biliary colic before being admitted to hospital.

CASE 1.—A woman, aged 69, was admitted as an emergency case with acute cholecystitis. She was much collapsed and was having frequent spasms of biliary colic which were relieved by morphia. At the end of a week her symptoms had partially disappeared, while after four weeks' interval the acute condition had practically subsided and it was decided to perform a laparotomy. A cholecystogram three days previously had revealed the presence of two large stones in the gall-bladder. Under gas and oxygen the abdomen was opened by a right paramedian incision and a cholecystostomy was performed with removal of the stones; the operation took 35 minutes. She vomited at frequent intervals for four days after the operation, during which time the drainage was maintained. On the fifth day she developed a temperature of 103·5° F. with signs of congestion in the right base. On the eighth day, however, the temperature became normal and the signs in the lung had cleared up. She died on the tenth day and autopsy revealed a deep-seated subphrenic abscess with manifestations of what had been massive collapse of the right base.

CASE 2.—A woman, aged 48, had had several attacks of acute cholecystitis and was admitted in one of them. She was somewhat "chesty" and had a dilated irregularly-irregular heart. Four days later a cholecystectomy and appendicectomy were performed under gas and oxygen, the total time being 1 hour 20 minutes. Almost as soon as she returned to the ward she vomited, and this persisted at irregular intervals for three days. The day after operation her temperature was 102° F., her respiration-rate 32, and her pulse-rate 120. There were well-marked signs of a broncho-pneumonia of the right lung, from which she died at the end of the fourth day. At autopsy the right heart contained much blood clot, while the right lung showed definite patches of consolidation.

These two cases have been described because they were the only two, in a series of 165, which had any lung complications. They were both particularly adipose women; the former did not really die of a lung complication and the latter had a very bad family history. In this series there have been ten cholecystectomies, all the other cases running an uninterrupted course.

The Other 163 Inductions.

For herniæ, hydroceles, and empyemata gas and oxygen gave every satisfaction, both from the anæsthetic point of view and in the after-results, for these patients were discharged sooner than those who had had a chloroform and ether mixture or ether. In rib-resection for empyema a further advantage of gas and oxygen is that after the parietal pleura has been incised drainage is facilitated by giving oxygen under pressure.

This series includes 11 panhysterectomies performed under gas and oxygen with a good result in every case. Two cases of resection of large intestine for scirrhous stricture did particularly well, one case being discharged five weeks after operation. One particularly pleasing operation under gas and oxygen was a Cæsarean section for contracted pelvis in a woman aged 33 of particularly small build. As soon as the fœtus was delivered outside the abdominal wound the uterus almost immediately began to contract and retract, with the result that there was very little hæmorrhage. This was due to the fact that the uterus was not paralysed as it would have been under a deep chloroform and ether mixture or ether.

The only serious difficulties I have observed whilst operating with gas and oxygen are: (*a*) controlling the bowel which is apt to balloon out through the wound; (*b*) stitching the peritoneum.

The first factor is especially apparent while working in the upper abdomen or attempting to get a good field for examination of the uterus and appendages. This difficulty, however, can easily be overcome by carefully packing off the bowel with three or four abdominal towels. If this has been done methodically the bowel will give no further trouble, either in a cholecystectomy or a hysterectomy.

In stitching the peritoneum there may be difficulty in getting the peritoneum to come together, especially in an upper abdominal wound. This is greatly facilitated if, before the abdomen is entered, the skin, recti, and peritoneum are injected with 20–30 c.cm. of 0·5 per cent. solution of novocain. In most cases this is quite sufficient to give the necessary relaxation for stitching the peritoneum. Another factor which has been found to facilitate relaxation is placing a pillow under the patient's knees when he or she is put on the table, so that the hip- and knee-joints are slightly flexed.

In the clamp and ligature treatment of hæmorrhoids the previous injection of 15–20 c.cm. of a 0·5 per cent. solution of novocain into the external sphincter ani gives a beautiful relaxation under gas and oxygen and also assists in overcoming much of the discomfort from painful spasms that the patient is apt to experience in the first 8–12 hours after operation.

In all cases opoidine was given three-quarters of an hour or an hour before operation. In the majority of cases one-third of a grain only was given, but in a few cases, especially in alcoholics and heavy cigarette-smokers, two-thirds of a grain were required.

It is now agreed that, although the method requires a little extra care and patience on the part of the surgeon, such operations as a cholecystectomy or hysterectomy are not only possible under gas and oxygen, but are in the best interests of the patients.

I am indebted to Dr. E. J. Chambers (Doncaster) the honorary anæsthetist, for permitting me to publish these observations, and to the honorary surgeons for the cases.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF OBSTETRICS AND COMPARATIVE MEDICINE.

A JOINT meeting of these Sections was held on Oct. 18th, with Dr. ARTHUR GILES, President of the Section of Obstetrics, in the chair, to discuss the

CAUSES OF EARLY ABORTION AND STERILITY.

The Chairman began by speaking of the need for clear definitions. Sterility, he said, meant incapacity to conceive, and abortion should not be spoken of as a cause of sterility. A woman who had conceived at all—whether she had miscarried or not—was not a sterile woman.

Prof. ARTHUR ROBINSON (Edinburgh), in opening the discussion, said he could not accept the Chairman's definition. To speak of a man or a woman as sterile was not in accordance with the biological view of sterility. The object of fertilisation was to carry on the race, and sterility must be the opposite of fertility. He would define sterility as lack of the power of a pair to produce living young which could in its turn become fertile.

Varieties and Causes of Sterility.

Sterility might be due to injury, malformation, or disease of the genital organs. An interesting group of cases were those in which one or other of a pair was incapable of producing mature germ cells (gametes). In the male such a defect might be recognised and verified, but in the female he did not know of any way in which this could be done. In human beings menstruation was no criterion, nor was "heat" in animals necessarily so. Parkes had said that all the symptoms and signs of heat could be present in the absence of any ovarian follicles. By feeding a young animal on actual anterior lobe of pituitary it could be made precociously fertile. By feeding an adult animal with the same substance it could be prevented from producing either ova or spermatozoa. Thus by the same means one could hurry up something and also destroy the capacity to do something. This latter process might conceivably occur under ordinary conditions. If an animal could not produce germ cells there would be no abortion, but there was another group of cases in which the germ cells were mature but abnormal. In Canada Savage and Williams had tried to detect this abnormality in the spermatozoa of bulls. They had found that the heads of the spermatozoa varied in size, and that if this variation was beyond certain narrow limits the particular bull was not a good sire. Following service by such bulls there were many abortions and the progeny were, in general, poor.

Recently a good deal had been written about vitamin E, which was said to be necessary to fertility. It had been found that if female rats were fed on food deficient in vitamin E and then placed with a male, the embryos died on the eighth day of pregnancy. That was, from the point of view of the observer, the effect on the embryo or the uterus. But it might be that this E-deficient food had so affected the chromatic quality of the ovum that,

although it was capable of uniting with the germ of the other sex to form a zygote, the latter was unable to live.

Another group of cases was that in which neither member of the pair was unfertile with other mates, but the two were unfertile together. He had conducted observations on a series of horses; 3640 ova were shed by thoroughbred mares, and over 58 per cent. of them failed to produce young, though the matings were carried out under the control of the Scottish Agricultural Board, and all the stallions concerned were proved to be healthy. The inquiry extended over five years. Clydesdales were also investigated, this time over a period of six years. In these, 48 per cent. of the ova produced no result, though insemination had taken place in the ordinary way, under fairly skilled observation. How could this non-fertilisation be accounted for? Commonly it was thought that under ordinary circumstances every ovum would be fertilised and so help to form a zygote which would form a new individual, but, even under favourable circumstances, only half did so. In the case of the mare, abortion might occur without being noticed. There was no close attachment of the chorion to the uterine mucosa. In Scotland no records of abortion were kept.

To experiment it was desirable to use an animal which produced several at a birth, and which was not too large. He chose the ferret. He obtained 165 which were useful for the purpose, and they produced 1640 ova; 39 per cent. of these ova failed to form living young—i.e., the results of union with living spermatozoa were dead. All the animals were kept in good condition. Animals were killed at varying stages to see what had happened. An average of 24 per cent. died in the earlier stages of gestation, 47 per cent. in the later. Very few of the spoilt ova were found dead in the peritoneal cavity. Some ova were left unfertilised, while their neighbours were fertilised. There was a uniform style of living for all the animals, and the males used were the same. Examining the ovaries of animals which did not go to term, before the rupture of the ovarian follicles, the same number of follicles was found as in other animals, and the ova were apparently the same. The only explanation he could think of was that in the chromatic arrangement of the nuclei the paired arrangement of the so-called "genes" had become disturbed, and lethal combinations of chromosomes would cause the zygotes to die after fertilisation had occurred. In some cases, however, the spermatozoa might not be able to unite with the ovum. But there was one complication which he could not quite explain. Two people married and might have no children, but if one died and the survivor remarried, that survivor might have children; and the same thing might, of course, happen after divorce. Yet he had never heard of a case in which the pair had no children but after divorce both had children by their subsequent partners. In some places it was usual for marriage not to take place until after a child had resulted from cohabitation, and if no child was to be born, the parties tried again elsewhere. As in the case of horses the spermatozoa of one male might not fertilise the ovum of a particular female. When this happened he suggested that there was an incompatibility between the germ cells of opposite sexes, so that they did not fertilise, or if they did so the arrangement of the chromatic particles was such that the zygote might die at any stage after fertilisation. The period during which it might die did not end with birth. An abortion was Nature's way of removing a failure so that the parents could quickly have another chance of mature reproduction.

Mr. J. R. BARKER preferred not to attempt definitions of abortion and sterility. In cattle the two conditions gradually merged into each other. Early abortion in these animals, showing a macroscopical abort, was rare, though early abortion was probably common. Sterility was an everyday state. A bovine abort at 31 days, with unruptured membranes, was a mass of about 20 oz. Early abortion in cattle might be due to any of a number of causes. The morula might lack power to absorb nutrient materials, or such nutrient materials might be lacking, or deleterious materials might be present. Two other possible factors were the absence of placental areas and definite disease of the endometrium. Mr. Barker regarded sterility in cattle as only a previous state to an early abortion, both being due to the same disease-causing agencies. For purposes of discussion he submitted the following causes of sterility: (1) Failure of the male to produce perfectly functioning spermatozoa (orchitis). (2) Failure of a functioning spermatozoon to reach the ovum because of vaginitis, cervicitis, endometritis, or salpingitis. (3) Failure of the ovary to produce a perfectly functioning ovum because of oöphoritis. (4) Failure of any ovum to reach a favourable position for fertilisation in the Fallopian tube owing to the presence of salpingitis.

Abortion in Man.

Prof. H. BECKWITH WHITEHOUSE said that in Germany the number of abortions each year was said to be between 500,000 and 875,000, while in 1919 one abortion for every two births took place in Hamburg. In this country investigations based on 3000 patients admitted to a gynæcological clinic showed an incidence of one abortion to every 4·7 births. The proportion of women who aborted at some time in their sexual life was about 35 per cent. The attempt to arrive at the frequency of natural abortion was vitiated by the criminal termination of pregnancies.

For gestation to proceed in the natural way it was necessary (1) that the germ plasm of the oöcyte and the spermatozoon should have sufficient initial vitality; (2) that the zygote should be implanted in a position favouring its subsequent development; (3) that the nutrition of the ovum should be maintained. The natural site of attachment of the zygote was the decidua of the upper uterine segment. Many abortions after the twelfth week seemed to be associated with a low placentation in the region of the os internum. It was difficult to get direct evidence to show that defective vitality of germ cells led to premature death of the fertilised ovum. Of 1233 women 336 were childless, 71 of them having aborted. Of 153 women who had one child 64 aborted. A number of factors might be operative.

A woman, aged 33, was married for five years and was delivered of a dead child at the seventh month of her first gestation, though no cause was apparent. The Wassermann reaction in both husband and wife was negative. She was a small woman, a seven-months child, and was the last of a family of 13. Her mother also was a premature child, and was the last of 16 children; also all her immediate brothers and sisters had been premature. These people showed a succession of lack of reproductive vitality. An abnormal implantation of ovum in the uterus nearly always led to disaster. Implantation in the decidua was commonly followed by death of the ovum. When abortion took place at the twelfth week it was commonly attributed to a low deposition in the os internum.

The development and function of the decidua called for special consideration. Its growth depended on a hormone which was elaborated in the corpus luteum; hence lesions in the ovaries might account for many of the early abortions which were associated with uterine fibroids, displacements, &c. The Graafian follicle and corpus luteum were liberally supplied with nerve elements, and so inhibition of the latter might be the cause of the "reflex abortion" which followed mental or physical shock. Half the ova aborting during the first three months of gestation appeared to be pathological, and the view of embryologists was that pathological ova were the result of an abnormal environment, and not of any inherent factor in the germ cells. In the case of the eggs of certain fishes, sea-urchins, frogs, &c., it was possible, by using certain solutions, to produce from normal

cells every form of anomaly occurring in man, such as spina bifida and anencephalus. Hence it was likely that abnormal food factors and various toxins might form an important element in causing obscure early abortions. In the raising of animal stock and in egg production the importance of iodine was receiving ever-widening recognition. An adequate supply of calcium was equally important. The work of Evans and Burr on a specific antisterility food factor, vitamin E, promised a new field of investigation concerning the causes and treatment of repeated abortion. In a series of 300 cases investigated, said Prof. Whitehouse, in 58 (19 per cent.) the cause of the abortion was not known, 30 were due to prolapse, 21 to fibroids, 23 to metritis, 29 to salpingitis, 14 to retroversion, 10 to ectropion, 5 to cystomata, 9 to toxæmia, and 9 were criminally induced.

Contagious Abortion.

Mr. O. STINSON did not doubt that in cattle abortion was mostly due to the bacillus of Bang. In nearly every case this organism found its way into the alimentary tract and was not conveyed by the act of coitus. It caused a very serious state of things. At present 50 farms were affected by it in his province, and in some it had been active three or four years. Gradually, on any particular farm, the activity of the bacillus became reduced. On farms where abortion was rife many cows proceeded to full term, but never fully held again; they did not abort, but afterwards were sterile, though duly served by the male. Early abortion occurred among cattle with fair frequency. The later the abortion the greater was the liability to sterility. In some regions, said Mr. Stinson, there was a deficiency of calcium and iodine in the food, and the cows only conceived in July, August, and September. During the last two years he had been doing work on calcium deficiency and sugar deficiency, and he had arrived at the conclusion that there was a definite association between abortion and sterility on one hand, and calcium, iodine, and sugar deficiency on the other. Much had been said about giving insulin in diabetes, but little was said of the possibility of too much insulin being present in the organism. In cases of abortion he thought there was usually an upset of basal metabolism or of the secretion of the endocrine glands.

Captain S. R. DOUGLAS, F.R.S., pointed out that in human abortion infection was seldom mentioned as a cause. A Copenhagen authority reported that there was an outbreak of *B. abortus* fever among women in Denmark—500 cases in the year. Among the cases were eight pregnant women, seven of whom aborted. It must have been passed on from the cow to man. He asked whether there might not be other organisms which had the same effect in the human—possibly including Malta fever. If material were taken from the uterus immediately after abortion and examined, some bacterial cause for the mishap might be discovered.

Mr. LESLIE PUGH said that of the cows affected with contagious abortion, about 30 per cent. passed the bacillus out into their milk. He therefore supported Captain Douglas's plea for bacterial search in these cases. The Bang bacillus affected only sexually mature animals. If young animals responded to it, it would probably lead to the end of the disease, because of the immunity to it which would be set up.

Dr. S. FORSDIKE said that on expressing the contents of the corpus luteum by squeezing the ovary, the cow was enabled to become pregnant at the next service.

Mr. A. L. SHEATHER, D.Sc., confirmed Dr. Forsdike's statement. He had done that operation a hundred times; it was easily done by manipulation per rectum. Abortion took place four days later, and the cow could be successfully served afterwards. Surgical removal meant the loss of the cow. In many cases of human puerperal fever he felt that the infection had not been due to any handling by physician or nurse, but that the bacillus had been there all the time; such autogenous infection was found in bitches and cows which had not been handed at all.

The CHAIRMAN suggested that when a woman aborted at a stage when she already had mammary secretion it might be worth while to make a careful examination of her milk.

SECTION OF MEDICINE.

AT a meeting of this Section, held on Oct. 22nd, the chair was taken by the President, Dr. R. A. YOUNG, and Dr. W. J. ADIE opened a discussion on

DISEASES OF THE PITUITARY BODY.

The common tumours, the adenomas of the anterior lobe, were classified, he said, according to the staining of their cells, but much confusion had arisen around the terms used. He would therefore employ the names "acidophile" and "basophile" for the cells with granules that stained red or blue with, for instance, Mallory's acid fuchsin anilin-blue, and "indifferent" for the agranular principal cells, the Hauptzellen, that hardly stained at all, and he would speak of the tumours as granular or agranular. The tumour associated with acromegaly was usually a simple granular adenoma of the anterior lobe with acidophile cells; sometimes, however, the cells were basophile or mixed. The cells seemed to be more often basophile in acromegalics who had become obese or cachectic, but no rigid formula could be used for associating the character of the cells with the symptoms. The signs of acromegaly appeared before the tumour was large enough to deform the sella and were almost always very obvious before it began to cause visual or other pressure symptoms. This fact had given rise to a dangerous and erroneous impression that a tumour of the pituitary body was necessarily accompanied by endocrine signs; the commonest form of tumour might actually be very large and cause failure of vision with no glandular signs or with very slight ones. Persistent glycosuria occurred with granular adenomata only—i.e., in giants and acromegalics. In many ways it resembled pancreatic diabetes but ran a variable course. Acromegaly might remain stationary for years, or the headaches and malaise might cease although the body continued to grow. In these cases operation could not be recommended, although delay increased the danger. Should operation be performed in the earliest stages in order to prevent deformities? At present it was only done to relieve headache and conserve vision; early operation might hasten the inevitable cachexia. At present it did not seem justifiable to operate for glandular disturbances only. X ray treatment should always be tried in acromegaly, though it was little use in other forms of tumour. Radium had not given good results.

Adenoma of the anterior lobe without acromegaly was the commonest and most important tumour. It was almost exclusively confined to adults and was agranular. The cardinal sign was loss of vision; there might be nothing else. This condition provided one of the few opportunities of saving sight by prompt operation, but it was often lost through failure of early diagnosis. In most cases there was a tendency to adiposity with smooth, pale, soft skin, scanty hair, amenorrhœa or diminished potency, pale optic nerves, bitemporal defects, headaches, and enlargement of the sella turcica, but endocrine disorders might be absent and the sella might be normal. Pituitary tumour should be suspected in every case of failing vision, even when some other cause seemed to be present; toxic amblyopia was diagnosed too readily. A pituitary tumour might cause loss of tendon reflexes and pains in the legs, so that every apparent tabetic optic atrophy should be scrutinised very carefully; the Argyll Robertson pupil confirmed a diagnosis of tabes.

Tumours arising from the remains of Rathke's pouch were third in order of frequency, and were the only tumours to produce symptoms before the age of 15. The patient would be an intelligent and

cheerful child with gross signs of endocrine disorder, suffering from headaches and failing vision, swollen discs, bitemporal defect, and a deformed sella with shadows above it. Failing vision, however, might appear at any age in patients free from endocrine symptoms, and in adults the typical picture might be absent. The ultimate prognosis was bad.

The symptoms in these cases fell into two groups: those due to intracranial pressure and those due to dysfunction of an endocrine gland. A typical symptom was diabetes insipidus, about which there had been much controversy. Polyuria might occur when the lesion was confined either to the posterior lobe of the pituitary body or to the hypothalamus. The gland and the adjacent centres acted together as a neuro-endocrine mechanism, and this was probably true for all the symptoms associated with disease of this region. How the mechanism acted, whether it was nervous or hormonal, we did not know. Since injury to the tuber could produce polyuria although the gland was intact, the nervous centres seemed to be predominant. Moreover, injury to the tuber produced polyuria when the gland had been removed and the kidneys completely denervated; apparently a lack of the nervous impulses conveyed from the peri-ventricular nuclei to the medulla and by the splanchnic nerves caused metabolic disturbances in the tissues. The diabetes insipidus of pituitary disease was milder and associated with less desiccation and emaciation than that of midbrain disease. Polyuria was certainly not a simple symptom but the complex sum of a number of disturbances of simpler functions of vegetative centres. Until we knew more of the metabolism of water we could not solve the problems of growth and metabolism.

Mr. NORMAN DOTT reviewed a number of cases which illustrated the types of disorder, the nature of treatment, and the results. These included examples of simple hyperpituitarism in the child and in the adult, eosinophile hyperpituitarism associated with acromegaly, pure visual disturbance, and a combination of visual with other symptoms. There seemed to be some evidence, he said, that the eosinophile cells were connected with growth and the basophile cells with sexual ability.

Pathological Examinations.

Prof. E. C. DODDS called attention to some methods of investigating pituitary disease. Giant animals could be produced by injecting extracts of the posterior lobe of the pituitary into the peritoneal cavity. The extract of the anterior lobe stimulated the ovary to produce œstrin and, if it were injected into an immature female mouse, puberty would occur in 56–60 hours—i.e., the vagina would open and œstrus appear. In the mature animal the effect was to produce continuous œstrus for a few days, after which the ovary became exhausted and œstrus would be inhibited as long as the anterior lobe extract was continued. This might explain the amenorrhœa associated with pituitary tumour. In the very early stages of pregnancy there was a sudden discharge of anterior lobe hormone into the urine. If the urine of a pregnant woman were injected into mice the ovaries would be found studded with corpora hæmorrhagica, which was a definite sign of pregnancy. Anterior lobe transplants into an immature male produced puberty with descent of the testes and spermatogenesis.

Dr. O. LEYTON described experiments with various proprietary preparations of pituitary which were found to have very different effects on diabetes insipidus, although all contained a standard number of units of oxytocic substance. The best results were obtained from freshly killed animals; delay for even an hour weakened the action, as did also filtration. The work had led on to the separation of the vasopressor from the oxytocic substance. He believed that many cases were due to an increase of sugar in the blood without any great alteration in the power of utilising sugar.

Epithelial Tumours in the Pituitary Region.

Dr. MACDONALD CRITCHLEY reviewed the embryology of the pituitary and said that epithelial tumours were of two kinds: those growing from primitive remains in Rathke's pouch, and those growing from relics of the old cranio-pharyngeal duct, which were found in 80 per cent. of adult brains. The first were rare and simple, situated in or just above the pituitary. They were described as having a ciliated or columnar lining, but in his experience it was exceptional to find ciliated or columnar epithelium either in Rathke's pouch or in the tumours. The second group were of three kinds: (1) the rather rare simple papillary cysts which might show cuboidal or transitional epithelium several layers thick; (2) the common adamantinomata, characterised by a single peripheral layer of columnar cells in palisade formation bounding epithelial masses rather like the prickle cells of the skin. The sections resembled those of adamantinomata of the jaw, and commonly showed secondary keratinisation, calcification, or even ossification, which caused suprasellar shadows in the X ray; (3) spinal-celled carcinomata which were malignant and very rare, only five cases being on record. It was just possible that there was another type, arising from the infundibular recess and not derived from epithelium.

The Surgical Differential Diagnosis.

Mr. HUGH CAIRNS reviewed the conditions which might resemble pituitary tumour. While the physical changes of acromegaly were usually unmistakable, he said, he had known one case of hypertrophic pulmonary osteo-arthropathy mistaken for pituitary tumour. In acromegaly the overgrowth was not limited to the extremities; the tongue and vocal cords were also involved. Occasionally an acromegalic might have a normal sella turcica as the adenoma grew up into the diaphragma sellæ; this produced a scotomatous type of hemianopia, liable to sudden and rapid failure of vision. Fröhlich's syndrome was often mistaken for pituitary disorder. Cysts of Rathke's pouch were more often confused with tumours of the fourth and hinder end of the third ventricle; X rays showed typical calcification in 75 per cent. of cases. There was usually no calcification in suprasellar endothelioma or meningeioma, but the symptoms were bitemporal hemianopia and optic atrophy without endocrine disorder or distortion of the sella. Glioma of the optic chiasma led to optic atrophy and occasionally to defects in the visual fields, obesity, polyuria, and polydipsia; there was a pear-shaped prolongation of the sella into the optic foramina, which might also be enlarged, and the visual disturbance was out of all proportion to the changes in the discs. The patients were young and often showed brown spots on their skin. Glioma of the third ventricle caused obesity, polyuria, and polydipsia, but papillœdema appeared early. Cerebral aneurysm might cause difficulty in diagnosis and a tumour in the fourth ventricle might cause a dilatation in the third, which pressed on the sella and caused symptoms such as amenorrhœa, purely as a result of pressure.

Pituitary Dysfunction and Mental Disorder.

Dr. F. A. PICKWORTH described work on the relationship of infection of the sphenoidal sinus to disorders of the pituitary and brain substance. Organisms had been demonstrated within the pituitary in these cases. Resistance to the spread of infection from a septic sinus was offered by the sinus membrane and the capsule of the gland much more than by the intervening bone. A large deposit of colloid in the gland indicated previous adjacent sepsis, the normal amount of colloid averaging about 1·2 per cent. Endocrine disturbances were a marked feature among mental hospital patients, and Dr. Pickworth suggested that they were due to endocrine imbalance following pituitary disturbance after infections of low virulence, which spread very slowly along lymphatics

or thrombosed vessels. The symptoms varied according to the age and the stability of the other endocrine glands of the body.

Dr. T. C. GRAVES described two typical cases of pituitary disorder associated with sphenoidal sinus sepsis. The usual symptoms were general loss of muscle tone; disturbance of the peripheral circulation, causing extreme pallor and cyanosis of the extremities; disturbance of nutrition, with striking emaciation which might be followed by obesity; and disturbance of the reproductive mechanism, with amenorrhœa. An interesting feature was complete absence of pyrexial response to the injection of vaccines such as TAB, although the pulse-rate went up in the usual way. A large number of such cases had been collected and had improved after suitable rhinological treatment.

Dr. BERNARD MYERS referred to the importance of blood pressure, and Dr. ADIE briefly replied.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

(*Continued from p. 826.*)

SECTION OF RADIOLOGY AND RADIOTHERAPEUTICS.

DEMONSTRATIONS.

FOUR demonstrations were arranged in connexion with this Section.

Cinematography of the Living Cell.

Dr. R. G. CANTI preceded this demonstration by a brief explanation of the technique employed in making the films. It was found that the study of growing tissues under the microscope by ordinary methods entailed an enormous number of personal observations. Not only was the work very fatiguing, but, since only fairly well-marked cell changes were sufficiently striking to excite attention during the comparatively slow progress of growth in tissue culture, the events leading up to the change were not noted. Cinematography provided a means of recording changes too small to be appreciated by the eye directly. Also, by securing cinema pictures at intervals varying from 3 to 60 seconds and projecting them at the normal rate of 16 per second, the processes which occupied many hours in occurring could be "speeded up" and shown as if they occurred in a few minutes. The actual "speeding-up" effect varied between 50, 120, 480, and 960 times. Elaborate precautions were taken to prevent vibration affecting the apparatus. The cultures photographed consisted of periosteum of chick embryo of 6–8 days' incubation, and of portions of tumour of Jensen's rat sarcoma, each in a suitable medium. Three reels of film were shown.

Reel 1.—After preliminary views of the explant upon its microscopic slide, to give an idea of the size of the fragment used, a cinema film of the edge of the living culture was shown on which the events of 27 hours were "speeded up" 960 times. Fibroblasts, wandering out at the culture-edge, rapidly gave it a fluffy appearance, whilst ahead of the fibroblasts a zone of rapidly moving wandering cells was strikingly shown. Following this, a picture at higher magnification clearly showed the stages of cell division, the daughter cells moving away in opposite directions. Next a hand was shown drawing a diagram of a vegetable fibroblast, to be replaced by an actual photograph at high magnification of the cell itself, in which the nucleus, nucleoli, and fat globules were clearly visible. Similar pictures showed amœboid movements in a wandering cell, with its fine pseudopodia. High magnification views of cell division followed, in which the details of mitosis were seen.

Reel 2 showed the effects of irradiation upon the same cells, the source of irradiation being radium emanation contained in small glass tubes. After a period during which normal cell activity was proceeding, the commencement of irradiation was marked by a "black-out" of the picture. The first pictures showed irradiation of chick embryo periosteum, and was "speeded up" 480 times. Cell mitosis and the spreading of the growing edge appeared to cease instantaneously. Very soon the wandering cells assumed a spherical form, and after a moment the fibroblasts contracted down into irregular spheres and showed the "bubbling" characteristic of breaking-down cells. Several records of similar experiments at different speed and magnifications were shown. The remaining pictures recorded the effects of irradiating Jensen's rat sarcoma, in which the same arrest of movement and cell division, assumption of spherical shape, and commencing breaking-down were demonstrated, The action of irradiation of the intensity used showed the following points. Fibroblasts of normal periosteum, though rendered immobile, showed very little structural change after exposure. Very few became rounded or broke down. Wandering cells all showed a marked effect after 20 minutes' exposure; movement ceased, and the cells became rounded, and their outline blurred. If a cell was dividing the process ceased at once. When the cells of Jensen's rat sarcoma were irradiated, all types appeared to be affected, whether mobile or fibroblastic in type. These experiments of direct observation appeared to substantiate the hypothesis of selective action upon malignant cells.

Reel 3 showed direct cinematographic film of living cells under dark-ground illumination. The cells shown were the vegetative fibroblasts of the choroid of the chick embryo in 2–3 days' culture. Cell structure and movement were shown with extraordinary clearness. Only cells which are flattened out between coverslips and radium, and which remain in one optical plane, are suitable for this method.

Living Cells in Tissue Culture.

A demonstration of living cells in tissue culture was given in the Manchester Royal Infirmary by Miss S. F. Cox and Dr. F. G. Spear. They showed living cells as seen with dark-ground illumination and cell division in living cultures. They also gave a demonstration of stained specimens and charts showing the effect of various physical agents on cells cultivated in vitro. These agents included hard beam X rays, soft beam X rays, radium, radium emanation, and cold.

Cases Treated by Radium.

A demonstration was given in the out-patient department of the Manchester Royal Infirmary consisting of 103 patients who had previously been treated with radium by the Manchester and District Radium Institute. The patients were demonstrated by Dr. G. E. Birkett, Mr. W. R. Douglas, Mr. A. Graham Bryce, Dr. O. Chance, Mr. A. H. Baker, and Mr. K. H. Watkins. They included 73 cases of carcinoma of the buccal cavity, mostly treated between 1925 and 1928; it was noticeable that there is practically no impairment of function following radium treatment. As the result of the experience gained during the last few years, the technique is now almost standardised, and consists of implantation of needles of low linear intensity (0·66 mg. radium element), screened by 0·6 mm. platinum for 8 to 12 days. The importance of an adequate active length (10–20 mm.) was emphasised. The treatment of the lymphatic drainage area in these cases by radium alone is not yet on a satisfactory basis, and where glands are palpable block dissections had been performed. These involve the removal of the sterno-mastoid muscle and internal jugular vein. As a rule implantation is carried out in the neck at the same time.

Eight cases of carcinoma of the breast, treated by implantation of a large number of separate foci into the primary growth and the lymphatic drainage area, were also shown. In such cases the axilla is exposed, so that the implanted units can be placed in position accurately. The remaining 22 patients had had cancer of various types, but chiefly epitheliomata and rodent ulcers of the skin. Some of them showed clearly that rodent ulcers involving the eyelids can be successfully treated without damage to the globe and with a perfect cosmetic and functional result. The implanted units in these cases, and the cases of carcinoma of the breast, were of the same linear intensity as are used for the treatment of buccal carcinoma.

Functional Studies of the Tracheo-bronchial Tree.

The "cin-ex-camera" is the term applied to a new apparatus designed by Dr. William A. Hudson and Dr. Hans A. Jarre (Detroit, U.S.A.). It is designed for the purpose of making successive X ray pictures on film bands at short enough intervals to permit of the interpretation of the functional changes

occurring in the organ being studied. The apparatus will make up to five records per second, and will handle a film band up to 80 ft. in length The width of the film band can be varied. The method of procedure in the studies of the tracheo-bronchial tree which was demonstrated was the passage of a small soft rubber catheter, with the aid of a direct laryngoscope through the glottis into the bronchus, under cocaine anæsthesia of the glottis. Through the catheter lipiodol was allowed to flow into the bronchi. Records were made at the rate of from one to four exposures per second. Studies were reported on five individuals:—

1.—A healthy young female, in whom there were noted: (*a*) Regularly occurring narrowings of the bronchi, which seem to originate in the peripheral bronchi, and seem to be associated with the propulsion of the oil toward the main stem bronchi. These narrowings occur regularly during expiration. (*b*) The fact that the angles at diverging bronchi are greater during expiration than during inspiration. (*c*) Evidence of rotation of the lung field is seen. (*d*) A measurable shifting of the bronchial tree downwards during inspiration is present. (*e*) A shifting of the bronchi closely simulating the opening and closing of a fan. (*f*) The fact that a suppressed cough can force material into the alveoli, but during quiet breathing no oil enters the alveoli.

2.—A male, aged 58, with a moderate degree of emphysema revealed definite narrowings of the bronchial tree, which definitely progress toward the main stem bronchus. This phenomenon is very similar to a peristaltic wave. The other observations made in Case 1 were also noticeable. In addition it was noted that in an emphysematous lung the lipiodol flows into the alveoli very readily, this being attributed to an enlarged atrial opening.

3.—In a case of long-standing bronchiectasis no evidence of motor activity in the involved bronchi could be seen.

4 and 5.—In two cases of asthma the bronchi were found to be in a continual state of bronchial spasm, in fact the lipiodol did not enter the terminal bronchioli. In addition, areas of temporary spasm were observed.

The authors believe that there is a definite motor phenomenon in the tracheo-bronchial tree. This phenomenon is inhibited in cases of long-standing infection of the bronchial tree, but is hyperactive in cases of an asthmatic nature.

SECTION OF MEDICAL SOCIOLOGY.

VALUE OF HEALTH PROPAGANDA.

THREE papers written (1) from the point of view of the administrator by Prof. F. E. Wynne (Sheffield), (2) from that of the practitioner by Dr. H. C. Jonas (Barnstaple), and (3) from that of the press by Mr. H. A. Gwynne (President of the Institute of Journalists) had been circulated beforehand amongst the speakers invited to join in this discussion.

Prof. WYNNE adopted the rôle of *advocatus diaboli* as regards the claims to canonisation of propagandists other than workers in the statutory health services, and thereby gave zest to the discussion. Propaganda, he said, was a horrible word, and one of the unpleasant things popularised by the war, during which it came to mean "a competitive effort, in misleading the public of the particular nation concerned." It was, he said, essentially associated with the vulgarity which is an integral part of all successful advertisement. Public health propaganda and education had become the latest duty imposed upon local authorities, though much work of this kind had been done by voluntary organisations, the multiplication and overlapping of which had become, in his opinion, almost a public scandal. He thought the Minister of Health might be empowered to register these associations, to reduce their number from about 300 to 3, and to refuse registration to new competitors in this field. Whatever methods of propaganda were adopted, nothing should be done or said to accentuate that morbid absorption in his, or her, own health on the part of individuals, which is one of the worst vices of our time. The available methods were—public lectures, instruction in the schools, the distribution of special literature, and the judicious use of the public press. "Health weeks" could be organised so as to have an educational value, but might degenerate into mere stunts, without any lasting effect. Teaching of hygiene in schools ought to be valuable, but at present he was afraid it was not. In his experience the teaching given was, with few exceptions, perfunctory and in the wrong hands. Public lectures in large halls were of doubtful value, but lectures to small audiences, followed by questions and developing into discussions, were really educational. Most of the special literature which was submitted to him found its way to the waste paper basket, but he had found the magazine *Better Health* useful, and it was the only publication, apart from local leaflets, distributed by his department. As regards the use of the press, medical men were restrained by the rules very properly laid down by the General Medical Council, but could contribute articles on matters which they believed to be of public importance as from "a medical correspondent." He thought it was most important that the public should be kept in touch with the progress of medical science by wise and well-informed contributions to the press. Dr. Wynne concluded that the most important work done in the propagation of knowledge about health matters was that which was being done daily and persistently by our public health departments, their sanitary services, their maternity and child welfare services, their school medical services, tuberculosis services, and other sections of their activities; of these the public knew little, but they derived more benefit from them than they ever would from any much-advertised "propaganda."

Lord LEVERHULME said that he was intimately concerned with advertisement, but that he did not agree with Dr. Wynne that in order to be successful it must be vulgar. Industry was becoming increasingly interested in health matters. The periodical medical examination of employees had been suggested but was, at present, negatived, partly owing to the expense and partly owing to suspicion as to its object. The medical profession were unable to supply the signed articles which the press would prefer, and the profession could not help to advertise proprietary articles, although this would be useful to the public.

Dr. JONAS began by stating that he had taken some trouble to ascertain that the views expressed in his paper were generally approved by his brother practitioners. He went on to criticise the flimsiness of the evidence on which our population was alleged to be C 3. The most promising sign about the present health campaign was the stress laid on the education of the young. To teach healthy habits to the young was valuable, but to make the young think about their health implied failure. Dr. Jonas singled out for unqualified praise the Boy Scout and Girl Guide movements and the National Association for the Provision of Playing Fields. The method of propaganda adopted must not manufacture valetudinarians, or make people introspective. The search for health was not an aim in itself but only a means to a useful life. He was opposed to the circulation of cancer leaflets. Much good health propagandism was accomplished daily by the great body of general practitioners, especially by engendering in their patients a cheery optimism.

Mr. GWYNNE said the press was only too anxious to march side by side with medicine in the fight for public health. They were up against the strict rules and regulations of the medical profession. They were able to obtain an article from the best specialist on a particular subject, but it had to be published as "from a distinguished Harley-street specialist." He suggested that the British Medical Association might well examine this matter and see whether it could not evolve a solution of the difficulty and thus bridge the gulf between publicity and reticence.

Propaganda from the Public Health Services.

Mrs. E. D. SIMON (chairman of the School Inspection Subcommittee, Manchester) referred to the work of the school medical services, not only in caring for the children, but also in educating the parents. The general practitioner only saw his

clients when they were ill, but the school medical officer saw them when they were well and the beginnings of illness. There was now very little opposition among the parents in Manchester to the recommendations of the service. The dislike to dental treatment was being gradually overcome. As a preliminary to immunisation they must first explain the scheme to the teachers and subsequently to the parents. Propaganda by the school medical service was continuous, not spasmodic. It reached the bad and careless parents as well as the interested parents. It did not preach only to the converted like many public lectures and meetings.

Councillor WRIGHT ROBINSON (Manchester) thought the reports of medical officers of health were powerful agents for good, although they might be read only by influential people.

Lieut.-Colonel F. E. FREMANTLE, M.P., spoke in high praise of the voluntary associations, and pointed out that much coördination of these bodies had already been effected.

Dr. VEITCH CLARK (M.O.H., Manchester) thought the day by day work of the public health services, especially with the mothers and children, was the best form of propaganda. The lectures which brought the best results were those which were given at boys' clubs and similar places, sandwiched in among other items of a programme. Posters, he thought, were frequently indiscreet and lacking in earnestness or dignity.

The Press and the Medical Profession.

Mr. H. D. NICHOLS (President of the National Union of Journalists) thought this discussion under the auspices of the B.M.A. was a sign of the times. He believed that personal hygiene would become more important in the future. The only effective help given by the medical profession to the press at present was through the medical officers of health. It was high time that the medical profession as a whole should improve its publicity organisation, with a view to supplying orthodox and authoritative information.

Dr. H. B. BRACKENBURY admitted that he had been responsible for the wish that the hundred voluntary health societies should be scrapped and a single organisation formed. He caused some amusement by suggesting that Dr. Wynne might take upon his shoulders the unifying process. Dr. Brackenbury considered that the teaching of personal and domestic hygiene in the schools was one of the best methods of propaganda and that the general practitioner also had great opportunities.

Dr. WHEELER HART (Stretford) deprecated the alarming methods of propaganda adopted with regard to cancer tuberculosis and childbirth mortality. He had been 30 years in practice and welcomed education of the public in health matters but they must be careful not to make hypochondriacs.

Miss NORAH MARCH pointed out that the voluntary workers and associations had given the lead, which was subsequently followed by the Ministry of Health and the medical officers of health, and that in the penal clause of the Local Government Act, 1929, the status of these associations was given recognition.

Dr. EUSTACE HILL (Durham County) spoke very emphatically as to the value of the work accomplished by voluntary organisations and well-organised "health weeks." He was confident that the press could help much more and on better lines than at present.

Replies.

Lord LEVERHULME said they must have propaganda on health matters. The public could be led but could not be driven. The Daylight Saving Bill was an example of subtle persuasion.

Dr. JONAS thought the problem of coöperation between the medical profession and the press was almost insoluble, while Mr. Gwynne was slightly less pessimistic.

Reviews and Notices of Books.

COLLAPSE THERAPY IN PULMONARY TUBERCULOSIS.

La Collassoterapia nella Tubercolosi Polmonare e nelle Lesioni Distruttive del Polmone. By Prof. UMBERTO CARPI, Senior Physician to the Ospedale Maggiore, and Professor of Clinical Medicine at the Royal University of Milan. Ed. Cooperativa Farmaceutica. 1929. Pp. 268. L.40.

Prof. Carpi is an ardent disciple of Carlo Forlanini, who in 1880 brought to the notice of the medical world a method of treating phthisis by artificial pneumothorax. In a foreword on the historical side of the question he claims for his master absolute priority, although admitting James Carson, who wrote in 1820 "On the Elasticity of the Lungs," as one of the precursors. Prof. Carpi is also a supporter of M. Ascoli, who with Parry Morgan in this country has explored the use of partial bilateral pneumothorax when lesions are present on both sides of the chest. Indication for this form of therapy has been extended from phthisis to various forms of pleuro-pulmonary diseases, including hæmoptysis, pleural effusions, dry pleurisy, bronchiectasis, gangrene, and bullet wounds of the thorax. After an extensive explanation of these indications, the various forms of apparatus for artificial pneumothorax are described and illustrated, including the original instrument of Forlanini and that of Prof. Carpi himself. The advantages claimed for this instrument are that it acts by air displacement, has a working capacity of 100 c.cm., while its potential capacity is unlimited. It is very sensitive; a cylinder and piston act as an index of decompression or over-pressure in the pleural cavity. It accurately measures the amount of gas injected, and the quantity injected with each respiration can also be measured. The volumetric capacity of the pleural cavity can be ascertained by the measurement of the quantity of gas spontaneously aspirated, and it acts as well in the first production of pneumothorax as in the refillings carried out at a negative pressure. The instrument is easily sterilised, every part being detachable and capable of being washed in alcohol and ether. In a chapter on the physical signs found in artificial pneumothorax, Prof. Carpi draws attention to the area of hyper-resonance found in the opposite paravertebral region, which he attempts to explain. Just as happens in effusions, when the pleural sac, distended by fluid, is displaced towards the healthy side, so in pneumothorax the mediastinal pleura, owing to the tension of the gas, becomes a sac, which is pushed in front of the vertebral column and easily overlaps the middle line. The zone of hyper-resonance thus corresponds to the shape of the pleural cavity, and is more pronounced where the mediastinal pleura yields most—i.e., in the postero-inferior section, the so-called *recessus pleuræ*. In a chapter on the clinical practice of artificial pneumothorax some importance is attached to hypotensive pneumothorax as a therapeutic means of election. The efficacy of a pneumothorax at low pressure is subject to the condition that the lung is free from adhesions at the site of the focus. In such conditions the gas introduced even in lessened amount into the pleural cavity exerts its action on the lung in a measure proportionate to the elastic tension at the surface. Now the elastic tension is naturally diminished, if not abolished, at the site of destructive pulmonary foci, and on them the gas introduced exercises an almost selective action, even if it does not do so en masse on the whole lung.

Prof. Carpi notes that bilateral localisations in the region of the apex and hilus are those which best lend themselves effectually to this method, provided that with a moderate hypotensive pneumothorax there is sufficient expansion left in the free pulmonary bases. The force of the pulmonary elastic tension is at its minimum in the region of the hilus, weak at the apices, and greatest in the bases and edges. Small amounts, therefore, at a low tension, are sufficient

to neutralise those foci which are situated in the apex and hilus, and hence recent caseous lesions with a progressive tendency, and free from pleural complications, lend themselves best to the method of bilateral pneumothorax. There is much interesting and practical material in Prof. Carpi's book which will well repay the serious attention of those who are experts in collapse therapy.

FRACTURES AND DISLOCATIONS.

Treatment of Fractures and Dislocations in General Practice. Third edition. By C. MAX PAGE, D.S.O., M.S. Lond., F.R.C.S., Surgeon to St. Thomas's Hospital; and W. ROWLEY BRISTOW, M.B., B.S. Lond., F.R.C.S., Surgeon to the Orthopædic Department, St. Thomas's Hospital. London: Humphrey Milford, Oxford University Press. 1929. Pp. 284. 14*s.*

THIS book deals with the treatment of fractures and dislocations in clear and simple language. It is well illustrated, and provides just the kind of work that those who have to deal with fractures in general practice need for ready reference. No attempt is made to discuss a variety of ways of treatment for any individual fracture, but the methods selected are sound. The comparatively small size of the book is one of its chief attractions, and we hesitate to make any suggestion which, if adopted, might increase its bulk. It is necessary to say, however, that in future editions fractures of the ankle should be allotted more space; a classification based on the mechanism of their causation is more likely to give the reader a clear conception of these injuries and to enable him to follow the mechanical principles of their treatment.

This book should be in the possession of every medical student and general practitioner in the country.

SURGICAL PATHOLOGY.

Second edition. By WILLIAM BOYD, M.D., M.R.C.P., Professor of Pathology, University of Manitoba; Pathologist to the Winnipeg General Hospital. London and Philadelphia: W. B. Saunders Company. 1929. Pp. 933. 48*s.*

THE second edition of Prof. Boyd's Surgical Pathology has been generally revised and in parts rewritten. The chief changes are to be found in the chapters dealing with the stomach, the thyroid gland, and with malignant disease, especially in relation to tumours of bone, the testicle and the kidney, and the gliomata and melanomata. Many other sections have been recast so as to include new matter which has emerged since the first edition was published four years ago. All these changes have been carried out with judgment. Prof. Boyd's attitude towards disputed points is sane and critical; his discussions of the ætiology of malignant disease and the relation of gastric carcinoma to ulceration, for example, are admirably balanced; and the book as a whole may be recommended as a sound presentation of surgical pathology. There are 130 new illustrations, including a number of radiological ones, and several of the older figures have been replaced by others.

COMMUNITY HYGIENE.

By Dean FRANKLIN SMILEY, A.B., M.D., Medical Adviser and Assistant Professor of Hygiene in Cornell University; and ADRIAN GORDON GOULD, Ph.B., M.D., Assistant Medical Adviser and Assistant Professor of Hygiene in Cornell University. New York: The Macmillan Company. 1929. Pp. 350. 8*s.* 6*d.*

THIS is not a text-book, neither can it be classified with the popular books on health, since it is primarily intended for those preparing to fill a position in society which will involve responsibility for the life and health of others. Beginning with a short section on the history and development of modern public health work the author proceeds in simple terms to discuss the common sources of infection in man, and how best they may be avoided. The effects of the weather, the air, and sun on health, and the sanitary significance of the soil, good water, clean food, and adequate housing are next dealt with. Sections follow on such important community problems as mental hygiene, sex hygiene, tuberculosis, heart disease, and cancer. A strongly-worded warning on the need for guarding against quack remedies for cancer is included.

As an example of the improvements brought about in recent years in the health of the public by means of well-conducted schemes of hygiene, the sections on maternity and child welfare and on school medical work make interesting reading. The authors rightly emphasise the importance of the educative side of this work and the need for closer coöperation between health authorities and the community. Technical terms are avoided throughout and the work provides a general survey rather than a detailed study. Those wishing to make a deeper study of health problems will find an excellent guide in the numerous references supplied.

College students of all classes, teachers, and large numbers of the public interested in the welfare of the community will like this book. The medical student entering on his public health course would do well to read it, for it puts before him from the popular standpoint those problems which health authorities throughout the world are intent on solving.

SQUINT.

Its Causes, Pathology, and Treatment. Sixth edition. By CLAUD WORTH, F.R.C.S., Consulting Surgeon to the Royal London Ophthalmic Hospital (Moorfields). London: Baillière, Tindall and Cox. 1929. Pp. 246. 10*s.* 6*d.*

Mr. Worth's book on squint, first published in 1903, deals with the ordinary concomitant squint of children, not with the paralytic variety. In the preface to this new edition the author contrasts the treatment received 30 years ago by the average case of convergent squint with that received by a similar case to-day. There can be no doubt that the modern treatment of forcing the squinting eye to function by occluding or atropinising the good eye has great advantages over the older practice. Formerly when correcting glasses had been prescribed, the ophthalmologist took no further steps to prevent the good eye from continuing to do all the work. Thus the habit of suppressing the image in the squinting eye became so firmly established as to be permanent and incapable of alteration. The author claims to have proved that the amblyopia of a squinting eye is nearly always acquired from disuse, and it is the realisation of this fact that has been the cause of improved modern treatment. The younger the child when a squint becomes constant the greater the danger of amblyopia ex anopsia, and it is for children between the ages of 3 and 6 that efficient supervision can be most beneficial. The essential cause of squint is a defect in the cerebral function of fusing the two slightly differing images that fall on the retinæ of the two eyes. This power of fusion is a late development in children, and is usually not complete till about the age of 6; often it is absent altogether, but in many cases it is capable of being strengthened by practice—for instance, by Worth's amblyoscope, an instrument which can be adjusted to any angle. As a test for the different grades of binocular vision this instrument is of great service; as a means of education it requires much time and patience on the part either of the surgeon or of someone trained by him.

The theory of squint and the non-operative treatment are the main subjects of the book. Details of the operation for advancement vary in the hands of different surgeons; in describing his own method Mr. Worth lays special stress on the importance of getting a sufficient grip of the sclera with the sutures without going through. He has devised a special cutting needle for this purpose. Uncontrolled tenotomy he condemns, as do nearly all ophthalmic surgeons nowadays, unless for exceptional cases,

and the partial tenotomies practised in America he considers useless. For control he trusts to the lateral expansions of the muscle which should never be divided. He does not mention the plan, now often adopted, of reattaching the end of the divided tendon to the sclera further back than its original insertion.

THE ANALYSIS OF DRUGS AND CHEMICALS.

By NORMAN EVERS, B.Sc., F.I.C., and G. D. ELSDON, B.Sc., F.I.C. London: Charles Griffin and Co., Ltd. 1929. Pp. 372. 25*s*.

THE collaboration of a works chemist and a public analyst has resulted in the production of a concise and accurate book of reference. A works chemist is constantly receiving from his firm's customers samples of drugs and chemicals which are reported to have shown deviations from their normal characters; and in the investigation of these many fertile ideas originate. A public analyst, again, usually has a considerable accumulation of disconnected notes arising out of his routine tests which should not be lost to his less-practised colleagues. The reader of this joint work must have some acquaintance with analytical processes, for it is greatly condensed. Of the seven parts into which it is divided, Part V. (Galenicals) is of particular importance, and the appendix is invaluable. Here will be found information on the preparation of reagents, the specific gravity of alcohol solutions (with correction for temperature), the refraction of alcohols, sugar analysis, and the densities of various solutions. The methods described have been well tested, and can be followed with confidence.

DAIRY BACTERIOLOGY.

By BERNARD W. HAMMER, Ph.D., Professor of Dairy Bacteriology, Iowa State College; Chief in Dairy Bacteriology, Iowa Agricultural Experimental Station. London: Chapman and Hall, Ltd. 1928. Pp. 473. 25*s*.

TEXT-BOOKS dealing with dairy bacteriology are rare, though in recent years there has been a great extension of our knowledge of the bacteriology of milk and milk products. A comprehensive treatise by Prof. Hammer, whose investigations have contributed so largely to the development of the science of dairy bacteriology, is thus welcome. Its purpose is clearly defined—to supply a practical knowledge of dairy bacteriology to the technical dairyman. The subject is dealt with primarily from the economic standpoint, and the work provides a very complete survey of dairying problems dependent on bacteriology. A clear description of the normal lactic fermentation of milk is given, and of the causes of abnormal fermentations, with classification and characters of the organisms concerned. The chapters dealing with the bacteriology of butter and cheese include a detailed study of the bacterial, chemical, and enzymatic factors concerned in the production of ripeness, flavour, and aroma, and also in deterioration. The bacteriology of other milk products—i.e., condensed and dried milks, fermented milks, and ice-cream—is adequately summarised. Processes of milk preservation are fully described, the advantages and disadvantages of pasteurisation being discussed.

The book should appeal to public health officers as well as to dairymen, for the chapters dealing with contamination of milk and cream, and the precautions necessary for the production of clean dairy products are instructive. Valuable data, of which the tables on page 123 are a type, are given which serve to emphasise the influence of sanitary methods upon the bacterial content of milk. Of special interest to the health officer is the chapter dealing with diseases which may originate from milk and its derivatives or may be conveyed by them. The epidemiologist will appreciate the detailed accounts of recent milk-borne epidemics occurring in the United States. The references to infections by bovine tuberculosis and *Br. abortus* are quite up to date. In this section a summary of the present state of knowledge concerning food poisoning outbreaks due to milk and ice-cream would have been acceptable. An appendix, containing descriptions of the special media for the study of dairy organisms, would also have added to the value of the work, since these are not included in text-books of general bacteriology. The author has wisely embodied results of his own research amongst the valuable data supplied in each section, but he is not dogmatic. Recognition is given to the work of European authorities, such as Orla Jensen, W. G. Savage, and others, although we noticed no reference to the pioneer work of the Institute of Research in Dairying at Reading.

THE ART OF ANÆSTHESIA.

Fourth edition. By P. J. FLAGG, M.D. London and Philadelphia: J. B. Lippincott Company. Pp. 384. 21*s*.

THIS well-known text-book has been brought up to date, but has not altered much from its original form. As then, the distinguishing feature of the book, which is meant largely for the nurse anæsthetists of America, is the clear explanation of the way in which the phenomena of anæsthesia are produced and of their significance. The language is as plain as the excellent type. A quaint printer's error leads to "the anal sphincter of primiporous cervix" (p. 28). The least satisfactory section of the book is that dealing with chloroform. Here there are but scanty practical instructions, and a still less adequate physiological explanation of the peculiar dangers of the drug; nor is its use in midwifery given the consideration which that important side of chloroform administration certainly demands. The author's division of anæsthesia into two stages of induction, maintenance and recovery, simple and sensible in itself, is so complicated by the numerous subdivisions that we cannot give it preference over the classical four stages which we owe to Snow.

A BOOK OF CRIMES.

By A. SALUSBURY MACNALTY. London: Elkin Mathews and Marrot, Ltd. 1929. Pp. 328. 12*s*. 6*d*.

THE contents of this volume are ranged under the four headings Murders, Mysteries, Poisonings, and Thefts and Impostures. Of the 12 stories many like those of Madeleine Smith, Mrs. Bravo, Mary Blandy, Lord Ferrers, and Courvoisier are extremely well known, and several of them have appeared in the Notable Trials Series, or have formed the contents of other chronicles of similar character; but in each instance the author has attempted to obtain new information, and in some he advances further speculations towards the solution of remaining problems. Among the stories which will be unfamiliar to many English readers is that of the murder of the Marquise de Ganges, wife of the Sieur de Lande, a young French nobleman who was in attendance at the court of Louis XIV. when the Roi Soleil was at the top of his magnificence. The story of how the Marchioness met her death is elaborated frankly by some imaginative writing, and the fate of the Abbé de Ganges, the youngest brother and leader in the crime, is a sequel rounding off the story too symmetrically for credence, as the author suggests. The last story is that of Jenny Diver, the "dear artful hypocrite" of the "Beggars' Opera," and gives an amusing description of the methods of a beautiful and larcenous young prostitute in the reign of George II.

Dr. MacNalty may be congratulated on his ability to tell complicated stories vividly, and his medical knowledge enables him to lay proper stress on toxicological findings. But in two celebrated poison mysteries the process of unravelling gains nothing from the lapse of time, or the collocation of many theories. We are not helped to any decision as to the guilt of Madeleine Smith or the part played by the wife and the companion in the death of Charles Bravo.

THE LANCET.

LONDON: SATURDAY, OCTOBER 26, 1929.

THE HARVEIAN ORATION.

THE Harveian Oration of the Royal College of Physicians of London was delivered in the College on Friday, Oct. 18th, by Sir WILMOT HERRINGHAM to a full audience. The orator kept that audience deeply interested throughout a narration which, though related so easily, was replete with dated facts and quotations from contemporary sources—that is, contemporary with HARVEY. It will be increasingly difficult for distinguished persons, selected as official mouth-pieces, to find a new way of presenting their pious estimates of certain of our historic heroes, especially HARVEY and HUNTER. One method has been employed with great eloquence by different speakers in relation to HARVEY, and many will remember beautiful discourses, delivered within the walls of the College of Physicians, setting out the way in which HARVEY'S fundamental discovery transformed, as soon as its bearings and implications became known, the whole of medicine. But so thoroughly has this line of argument been pursued, that such reflections must, in the future, largely take the shape of showing how modern developments in pathology, as they occur, owe their clinical value to foundation upon the basis supplied by HARVEY. A second approach to the subject has suggested itself to many other orators who have, often with grace and erudition, expounded the text of HARVEY'S writings, and borne testimony to the analytical powers which he displayed in what Sir ARTHUR KEITH, from the anatomical point of view, has described as an unerring piece of detective work. A third method of keeping alive in grateful hearts HARVEY'S memory would naturally have been to draw a personal picture of the man and make him live before us in biographical shape; this has been done, as far as possible, by several orators, notably Sir GEORGE PAGET, and a fuller carrying out of the design can hardly be attempted for the excellent reason that material for doing it does not exist.

This fact was placed before his audience by Sir WILMOT HERRINGHAM in his first sentences when he described the extraordinary absence of general interest which followed HARVEY'S announcement of the true story of the circulation of the blood. Search in contemporary literature and memoirs has brought to light no mention by the leaders of thought in HARVEY'S day that the sun of medical truth had risen through the mists of ancient and mediæval speculation; and while the work of HARVEY went unnoticed by those among whom he moved, and who might have brought the news to the public attention, details of his private life are similarly scanty. At considerable intervals Sir D'ARCY POWER and Sir THOMAS BARLOW have resumed for us all that could be ascertained, and, since their researches, Sir WILMOT found that nothing of any consequence had come to light; but he was none the less able, by visualising for his hearers the social milieu in which HARVEY lived, to make "the little man," as he later affectionately called him, a real and intelligible character. As the personal medical attendant of CHARLES I. during that King's long struggle with the Parliamentary Party, HARVEY was in relation with both sides. He accompanied the King to Scotland, and after the detention of CHARLES by the Scottish Army, and during his period of imprisonment, HARVEY received passes through the belligerent lines, enabling him to continue his ministrations. And we get from what HARVEY did not do a suggestive picture of his absorption in what he considered it his duty to do. For practically he never said anything at all about what he either saw or thought. In his writings he mentions the King and Queen but once, and then in the usual terms of respect, while he mentions the Parliamentary Party once also, a little critically in respect of his own professional relations. Thus HARVEY was obviously a doctor and a physiologist, and obviously not either a courtier or a politician. In this connexion Sir WILMOT'S researches into HARVEY'S family, as represented by his several brothers, became pertinent, and the result of these researches made up much of his narration. All HARVEY'S brothers were engaged in trade. They were merchant adventurers, with London as the basis of their operations, while London was from the early days of the revolution the centre of the Parliamentary Party. The probability is, therefore, that as a doctor HARVEY stood by his patient, but that, as far as family tendency or environment went, he was prepared to see eye to eye on many points with Parliament.

And yet the closing passages of the Oration suggested that the mental capacities of the unfortunate King may have appealed to HARVEY'S philosophic mind in favourable contrast to the impressions of the intellectual abilities of the protagonists of the revolt. For Sir WILMOT found the leaders of the revolution, though temporarily successful, lamentably wanting in statesmanship, and the results to be not at all commensurate with the drastic nature of their objects or the manner in which they strove to obtain them. In a striking historical survey he drew a picture of the chaos into which the political and social life of the country had fallen by the close of the Protectorate, and, in so doing, he supplied, perhaps, the chief reason why the significance of HARVEY'S discovery escaped in an incredible fashion all popular notice. The people were too distraught to be able to respond to anything outside the pressing constitutional and practical needs of the country. Sir WILMOT HERRINGHAM'S Oration will long be remembered for its style and the manner of its delivery; it was a happy compound of dignity and simplicity.

THE PURPOSE OF THE BLOOD.

ONE purpose of the blood is well known; it is to carry oxygen and other foods to the tissues, to take away their excreta, and to keep them in such communications with one another as they effect by chemical substances. To serve these ends it is obviously essential that the blood should go round the body; bakers' vans and dust-carts are no use if they stand still. But the blood is something more than a nimble servant of the body; it is a tissue or organ whose chief business it is to be itself, to conserve its own individuality, and to take its place as a sovereign state in the commonwealth of the organism; for these purposes motion is not primarily necessary. It was to this aspect of the blood that Prof. A. E. BOYCOTT devoted his presidential address to the Section of Pathology of the Royal Society of Medicine on Oct. 15th (briefly summarised in our last issue), and he

made out of it a tale of rather wider interest than is generally comprised in hæmatology. The total quantity of circulating red cells, including those waiting in the spleen, together with the cells in the bone-marrow from which they arise, may be regarded as forming an organ of much the same validity as the liver or kidney. For this organ there is no definite name; he proposes that it should be called the "erythron"—which may or may not prove useful. The glossary of hæmatology is dreadful enough already and it seems a pity to add to it, though we admit that such a word avoids periphrasis and such confusion as may arise from such expressions as the "size" or "quantity" of red cells which may refer to individual corpuscles or their concentration in the blood as well as to the total amount of them in the body. He recalled well-known observations showing that the erythron is increased in size by a deficiency of oxygen supply to the tissues stimulating the marrow to activity whether this is due to high altitudes, obstructed respiratory passages, chronic carbon monoxide poisoning, slow circulation, or anæmia; these are representative examples of each of Prof. J. BARCROFT'S categories of anoxæmia as anæmic, anoxic, and stagnant. If the erythron starts to grow from the normal level this increase may be called "hypertrophy," if from a deficiency it is "regeneration." The two processes plainly cannot be distinguished. The failure of such hypertrophy in most cases of cardiac disease was attributed to the desire of the body to avoid throwing any extra work on the heart by increasing the viscosity of the blood and the extreme growth found in the Vaquez-Osler disease was interpreted as a benign tumour. Similarly, a decrease in the erythron ("atrophy") is produced by an excess of oxygen, as has lately been shown clearly by Dr. J. A. CAMPBELL, and experimental analysis of what happens to the excess blood in the polycythæmia produced by transfusion shows that this "atrophy" is an active process of destruction, not a passive wasting away.

What happens under all circumstances is that the body adjusts the size of the erythron to the prevailing circumstances, the basal consideration being the supply of oxygen to the tissues. The "normal" values for the red cells and hæmoglobin in the blood are determined by the accidental fact that we live in air containing 21 per cent. of oxygen at a pressure of about 760 mm. of mercury. Those who live in the Andes at 14,000 feet have a "normal" hæmoglobin of half as much again. It might obviously be better for the tissues to have a freer supply of oxygen than they get, but the objection to raising the concentration of red cells beyond its present value is that the increased viscosity of the blood would throw more work on the heart. The prevailing concentration of our blood is presumed to be the best compromise which can be made between these considerations, taken in reference to the rate of the circulation. Prof. BOYCOTT went on to point out that it was difficult to get away from the impression that these reactions were purposive in character, and he quoted several other instances of conditioned growth. Perhaps the most striking was an experiment on the liver by P. ROUS and L. D. LARIMORE[1] which deserves to be better known. Occlusion of portal branches to a part of the liver leads to a progressive and ultimately complete atrophy of the parenchyma deprived of portal blood and to hypertrophy of the rest of the liver. But the atrophy is conditional on the hypertrophy and it fails to progress when the bile-duct from the proliferating tissue is tied and hypertrophy checked. This is certainly analogous to the observations that transfused blood is not destroyed unless it is in excess and that a hæmorrhage is not regenerated if the animal is in no want of oxygen. Other illustrations were taken from the kidney and the regeneration of the claws in a prawn and the tentacles in a worm. Prof. BOYCOTT drew from these facts the conclusion that a frankly teleological outlook gave the fairest summary of the data and was also the most profitable in research; the reactions of animals are determined by their needs and directed by their intentions. It may be so, and teleology of one kind or another is certainly more in fashion than it used to be, though it is still abhorrent to those who look to a mechanistic analysis to solve the problems of living organisms. It is, too, a dangerous point of view in so far as it encourages anyone to substitute loose thinking for the hard discipline of experiment. But the phenomena of the adaptation of the blood to the environment are certainly very interesting and give hæmatology a position of general biological importance. One is reminded of the claim made a while ago by Dr. A. E. COHN,[2] of the Rockefeller Hospital, that scientific medicine, treatment excluded, might well be regarded as an independent science, standing on its own feet and needing detachment from practical life.

[1] Jour. Exp. Med., 1920, xxxi., 609.

UNDULANT FEVER IN ENGLAND.

IN 1921 L. E. W. BEVAN drew attention to the existence in Rhodesia of a type of undulant fever that appeared to be due to infection from cattle suffering from contagious abortion. Since then many workers throughout the world have reported cases of human infection with *Brucella abortus*. Whether this disease is actually increasing in prevalence, or whether the apparent increase is due to improved diagnosis, it is at present impossible to say, but Captain W. DALRYMPLE-CHAMPNEYS, in a report just published by the Ministry of Health, clearly favours the view that the increase is real. In this country he has been able to find records in the literature of only 14 cases of undulant fever, excluding those contracted abroad. To these must be added a fifteenth, reported by Dr. H. E. BLOXSOME and Dr. E. N. DAVEY in our last issue. On the other hand, the disease is very prevalent on the continent, in North Africa, and in the United States; in Denmark alone there are said to be 500 cases a year.

The mode of infection is extremely puzzling. It is known that *Br. abortus* is excreted in the cow's milk and in one investigation, confined largely to the north-western districts of this country, the organism was actually demonstrated in 8·8 per cent. of samples of market milk. To conclude from this, however, that the disease is contracted from drinking raw milk is unjustifiable. If this were so, it would be reasonable to expect that the majority of the cases would occur in children and in females, but both in Denmark and in this country the results of agglutination tests suggest that the disease is most prevalent in young adult males. M. KRISTENSEN and P. HOLM[3] found that in Denmark the highest incidence was in agricultural workers, especially those coming into close contact with cattle, and they were therefore led to suggest that infection might be due to direct contact with infected cattle. In this connexion it is important to remember, as Captain DALRYMPLE-CHAMPNEYS points out, that cattle are not the only animals liable to be infected with this organism. He has collected information on the occurrence o

[2] Jour. Philosophy, 1928, xxv., 403.
[3] Centralbl. f. Bakt., 1929, cxii., 281.

abortus infection in swine, sheep, dogs, and horses, and he states that contagious abortion is common amongst sheep in France and that its importance is increasing amongst pigs in the United States. It therefore seems possible that infection may occur either by direct contact with diseased material, in which case the organism probably gains entrance to the body by skin abrasions or by the conjunctiva; or by the ingestion of infected food material such as milk, butter, or cheese. Whichever of these things happens there seems to be a general relationship between the prevalence of the disease in animals and its occurrence in man. The disease, in fact, presents many points of similarity to anthrax. As is well known there are two main types of anthrax: the non-industrial type seen in districts where the disease is rife amongst cattle and sheep, and affecting farm workers, veterinary surgeons, butchers, and others who come into close contact with the infected animals; and the industrial type, seen in manufacturing and urban districts, and affecting workers who handle material such as wool and horse-hair which is liable to be contaminated with anthrax spores. In the non-industrial type infection is direct from animal to man; in the industrial type it is indirect, passing through some intermediate agency. It may well be that two types of *abortus* fever in man will be recognised: the agricultural type, affecting farm-hands, and occasioned by direct infection from aborting animals; and the non-agricultural type affecting the population at large, and due to ingestion of infected milk and other products.

It is very desirable that we should learn more about the epidemiology of this disease, and Captain DALRYMPLE-CHAMPNEYS puts forward a series of excellent suggestions for investigation. In his opinion valuable information might be obtained from two main sources. In the first place, it is desirable to have careful investigation, with a report to the local or central health authority, of all obscure cases of continued or intermittent fever with symptoms and signs suggestive of undulant fever, or in which no other definite diagnosis could be made. The examination of the patient's blood for the presence of the specific organism, and the agglutination reaction with the blood serum and a standard brucella culture, should be carried out whenever possible. In the second place, he recommends the routine examination by the agglutination test, whenever possible, of samples of blood sent for diagnosis in cases of continued fever, or even those submitted for the Wassermann reaction. By these means there is little doubt that we should soon have a considerable amount of information about the frequency of the disease amongst human beings. But however interested we may be, as medical men, in the diagnosis of the disease, it is clear that for prophylactic purposes we shall have to devote far more attention to the disease in animals. At the present moment exact figures of the frequency of contagious abortion in cattle are impossible to obtain; nor is any accurate information available about the distribution of the disease in different parts of the country, although some rough figures were given at the discussion reported on p. 874. It seems desirable to enlist more fully the help of the veterinary profession to make a complete topographical survey of the disease as it occurs in cattle, pigs, and sheep. All samples of milk sent in for examination for tubercle bacilli should be examined for the presence of *Br. abortus*—a task involving very little extra trouble since this organism is pathogenic to guinea-pigs and can be recovered from the tissues by simple cultivation. And finally, all Widal-negative sera should be tested for agglutinins to *Br. abortus*, and a blood culture should be taken from all patients reacting to this organism at a titre of 1/80 or over. It may be pointed out that this country is admirably suited for such a survey. The confusion so often arising in other countries between *Br. abortus* and *Br. melitensis* should not occur here, for goats are not very common, and have so far not been found infected with the latter organism.

Annotations.

"Ne quid nimis."

GROUP OR STATE MEDICINE?

IF the public and the medical profession are no longer satisfied with one another, it may be, as Dr. F. G. Crookshank suggests in a recent issue of the *Forum*, because they never were. In any case he thinks that a little honest discussion can do no harm, and, like Sir Farquhar Buzzard, has made an interesting attempt to weigh the grievances of the public impartially, and to discover their cause. The poor have little to complain of, for on the whole they get the best doctoring there is. They have the opportunity when really ill of submitting themselves to the best medical opinion and treatment available, under doctors whose anxiety is not to please but to do their best. The rich come off next best because, although they can pay for the best medical advice and treatment in the land, they are able to choose for themselves, and in this choice they may be led astray in their choice of a specialist unless they act under the direction of a good medical adviser. This adviser should be their family doctor, who can tell them when to consult a specialist and what specialist to go to. But in many cases they have thrown him aside and sought specialists on their own account, guided then only by knowledge picked up from the papers, the best of which cannot be trusted to discuss a medical subject without eccentricity of opinion or material error, or by the idea that what costs most must be the best. The middle-class man's grievances are due first to the fact that he has aped the rich in throwing over his best friend, the family doctor, and putting himself in the hands of specialists who may not know enough of general medicine to have a proper grasp of their own specialty. The second and most pressing grievance of the middle class man is that, although he is not poor enough to receive hospital treatment, he cannot afford the fees of pay wards or nursing homes, with what seems to him their unnecessary and useless luxury. Dr. Crookshank's solution of the problem lies in a great extension of hospitalisation. Hospitals will have to be formed by communities or social groups, organised to deal with the different medical, surgical, and social needs of these groups. Doctors will have to abandon their prejudice against receiving public money for work done in hospitals and admit the need for a measure of public control over such medical service other than by purely medical boards or committees. Any system of payment by fee according to work done is, in his view, foredoomed to disaster. With such a scheme there would be: first, the present hospitals and infirmaries for the indigent sick; second, a chain of hospitals on the German model for the insured population; third, municipal hospitals for all citizens who might care to use them, the wards of which would be free, with cubicles or private rooms available on payment of a small additional contribution; fourth, coöperative hospitals organised by group enterprise, with or without municipal state subsidy, or by insurance corporations; and fifth, privately run hospitals or nursing homes with accredited medical or surgical staff for those who desire a luxury service. These hospitals would be partly staffed as at present by paid resident medical officers, but would

also have a visiting staff of physicians and surgeons who would be paid for their services while retaining the right to private practice. The general practitioner in the neighbourhood of such hospitals would keep in close touch with them and share the sessional work at the clinics. This is the solution of "group medicine," as distinct from that of "State medicine," which was advocated by Mr. T. Swann Harding in the previous number of the *Forum*.

FILTRABLE TUMOURS OF FOWLS.

IN casual references nowadays the term "Rous sarcoma" is often used loosely to indicate filtrable fowl tumours in general. This error is an injustice to the fine researches of the staff of the Rockefeller Institute, and, by the implied inference that only one filtrable fowl tumour has been discovered, obscures a problem of cardinal importance. It ought always to be remembered that Peyton Rous and his colleagues described and studied five filtrable tumours, comprising three distinct structural and biological types. No. 1 and No. 43 were simple spindle cell sarcomata; No. 18 and No. 38 sarcomata with a characteristic structure, and No. 7 an osteochondro-sarcoma. These tumours retained their characters during continued transplantation. When loose references to the "Rous sarcoma" are made it is usually tumour No. 1 which is meant, but it is seldom realised that this type is a relatively rare form of avian neoplasm. Since the first publications from the Rockefeller Institute on this subject observers in Germany, Japan, France, and Italy have added other examples of filtrable new growths of the common fowl. In this country two such tumours have been discovered and propagated by Dr. A. M. Begg, the first an endothelioma [1] and the second a fibrosarcoma.[2] During the first three years of its propagation by cell grafts the fibrosarcoma grew slowly—sometimes a year or more elapsed between two transplantations—and formed a hard fibrous mass with the structure typical of a fibroma. In the current number of the *British Journal of Experimental Pathology* Begg describes the subsequent behaviour of the tumour. It has quickened in its rate of growth and become softer and more cellular. Consequently it has now become possible to make filtrates from it, and these have proved to be potent; dried tissue is likewise active. The tumours engendered by both cell-free filtrate and dried tissue reproduce the structure of the parent growth. This change in malignancy calls to mind a relatively common and well-recognised property of the recurrent fibroma of man. The resemblance to a common typical human tumour is thus not confined to gross and microscopic anatomy, but includes also a well-known and serious biological character.

Each addition to the number and histological types of filtrable tumours forces the problem they represent into the foreground of cancer research. The work of Peyton Rous, J. B. Murphy, and their collaborators was buried for years in the obscurity of technical journals, partly because of the overwhelming preoccupations of the Great War, and partly because filtrable tumours run counter to opinions which had come to be regarded as finally established. Representing a concrete challenge to the biological conceptions of the origin of cancer they demand vigorous investigation. What is the nature of the causative agents present in potent filtrates? Are they viruses of extrinsic origin, or enzymes or other inanimate catalysts, manufactured in, and by, the tumour cell itself? Rous, in his pioneer work on this subject, gave some support to the virus theory, which has been espoused in this country by W. E. Gye. The opposite view that these agents are of intrinsic origin is, for the moment, in the ascendant, but opinion fluctuates as adherents of one or another school are vocal. Prof. A. E. Boycott has argued,[3] by analogy and on theoretical grounds, in favour of the intrinsic non-living catalyst theory. Evidence from experiment must decide this issue, but it is slow to accumulate. So far as the catalyst theory is concerned, almost the only evidence as yet brought forward in its favour is found in the work of Carrel and Brebner and that of Murphy and Leitch on the production of tumours with materials which cannot conceivably contain a virus. Tumour formation can be induced both in fowls and mammals by the application of dead chemical substances—e.g., coal-tar—but by this method the tumours appear only after repeated trauma over a long period of time. In the experiments of Carrel, Murphy, and Leitch the time of tumour formation after one injection was so short as to suggest the action of a specific agent. Carrel and Brebner used normal chick embryo and various chemicals, including arsenious oxide and indol; Leitch, in a solitary experiment, observed a tumour to follow the inoculation of normal fowl pancreas; whilst Murphy achieved the same result by injecting derivatives of normal fowl testis. The experiments of Carrel and Brebner have not been repeated; Leitch has already announced his inability to repeat his single observation, and Murphy's results remain unconfirmed.

It is true that a positive result is of more value than many negatives, and is not to be rejected as accidental until renewed efforts to bring it off again have failed. If it cannot be repeated either the conditions under which it had been obtained have not been completely reproduced or it is due to unnoticed errors which can only be eliminated by repetition of experiments. In the issue of THE LANCET of Oct. 5th (p. 697) Dr. Begg and Dr. Cramer related an experience of their own in which the inoculation of fowls with a simple extract of a mouse carcinoma was followed by the formation of the Rous tumour No. 1 at the site of inoculation. This was an experimental error, and Begg and Cramer were fortunate in being able to trace the sequence of technical operations which led to such a remarkable result. It was found to be due to the accidental use of a mortar, which was contaminated with tumour tissue derived from a No. 1 sarcoma. Such a simple explanation may not suffice to account for any of the unconfirmed observations of Carrel, Brebner, and Murphy—Prof. Leitch has already shown in THE LANCET of Oct. 12th that his observation cannot be explained in this way—but it does indicate the ease with which simple errors can creep unnoticed into biological experiments.

[1] THE LANCET, 1927, i., 912.
[2] Brit. Jour. of Exp. Path., 1927, viii., 147.
[3] See THE LANCET, 1928, ii., 817.

ARE ACCIDENTS A DISEASE?

THE study of industrial accidents continues to yield results of practical interest. First, examination of records disclosed that less than 20 per cent. of accidents were associated in any way with those dangerous power-driven machines to which thought naturally turned, while the great bulk originated from circumstances, such as persons falling or articles falling on persons, directly under human control—a control also largely concerned in machinery accidents, as motor-car accidents exemplify. Next, accidents were observed not to be chance occurrences, but to be so distributed that a small group of workers monopolised far more than their due share, according to the laws of chance. Further, clever statistical research established that individuals possess different innate liabilities for sustaining accidents, just as individuals vary in their tendency to succumb to infectious diseases, and that, given knowledge of the accidents experienced in the past by any group of workers, an accurate estimate can be made of the accidents they will experience in the future. Not only so, but those who experienced most accidents were found to suffer most sickness, and—a matter of no small economic import—to be the least efficient workers. Accident causation has been further linked up with the reaction of the worker to his surroundings by finding that there is an optimum temperature about 67° F., at which the incidence of accidents

is least, but above or below which the incidence steadily rises. In fact, if the traumatic origin of the records were unknown, the morbidity and mortality under investigation would certainly be attributed to organic disease. The truth being that organic disease and accidents are end-results of the reaction of the living organism to its environment. Now these investigations of the Industrial Health Research Board have been carried a stage onward by new work [1] wherein tests were sought for by which those inherently predisposed to accidents might be detected. Probably few more unlikely searches have been undertaken; nevertheless no small measure of success has been achieved. It was undertaken by testing 1304 Royal Air Force apprentices, 387 Royal Dockyard apprentices, and 143 naval ratings, concerning whom information was available as to entrance examination results and subsequent accidents experienced. Tests were selected to bring out various characteristics, such as intelligence, stereoscopic vision, power and æstheto-kinetic capacity. The last somewhat cumbrously named tests included (1) responses to visual, auditory, and tactual stimuli; (2) skill at dotting a series of small circles passing by at an increasing speed; and (3) capacity to follow irregular movements of a mechanically controlled pointer. This set of tests enabled a group comprising 25 per cent. of the apprentices to be isolated; this group showed up worst at the tests, and were found to have an accident rate approximately twice that of the remaining 75 per cent. On the other hand, those who did well in these same tests tended to be more proficient in their occupations. Skill at æstheto-kinetic tests was not closely correlated with intelligence indicating that some types of mentality do not go with special sense muscular reactions; and those failing at the tests may include the class naturally fitted for scholastic and sedentary occupations. The capable authors of this report point out how they are breaking new ground with pioneer work, which must be advanced further before its full value can be obtained in practice.

[1] A Study of Personal Qualities in Accident Proneness and Proficiency. By Eric Farmer and E. G. Chambers. Report No. 55 Industrial Health Research Board. H.M. Stationery Office. 3s.

BCG VACCINATION OF PIRQUET-NEGATIVE ADULTS.

IN a lecture published in *Tidens Tegn* for Sept. 20th under the alluring title: Will Norway be Free from Tuberculosis in Ten to Twenty Years? Dr. K. Heimbeck, to whose experiments with BCG on Pirquet-negative nurses reference has already been made in these columns, produced some remarkable figures and evolved a new scheme for the campaign against tuberculosis in Norway. His scheme is, in fact, a deliberate challenge to the present order of things in the administrative world of tuberculosis. The three chief headings of his lecture concerned: (1) the Pirquet tests performed by different doctors in various parts of Norway; (2) his own experiments with the subcutaneous administration of BCG to Pirquet-negative nurses, medical students, and others; and (3) a vigorous criticism of the conduct of the present official campaign against tuberculosis in Norway. With regard to the first heading, he showed how recent Pirquet tests had, apparently, upset the teaching that the overwhelming majority of human beings living in civilised communities are infected by the tubercle bacillus before adult life is reached. In Norway less than 50 per cent. of the population become Pirquet-positive during childhood. This observation is of far more than academic importance in view of the possibilities put forward by Dr. Heimbeck with such confident optimism of rendering the Pirquet-negative element of the country immune to tuberculosis by vaccination with BCG. With regard to the second heading, Dr. Heimbeck illustrated the accompanying diagrams with the following observations: In 1924 the communal hospital of Oslo at Ullevaal accepted 109 young women as probationer nurses, of whom 58 were Pirquet-positive, while 51 were Pirquet-positive when they first joined the hospital. As will be seen from the shaded portions of the two columns representing these two lots of probationers, only one of the originally Pirquet-positive probationers developed clinical signs of tuberculosis during her career as a nurse in the hospital, whereas this misfortune befell 17 of the 51 originallyPirquet-negative probationers. As amazingly great a proportion as 28 per cent. of the nurses who were Pirquet-negative on joining the hospital in the years 1924, 1925, and 1926 subsequently developed signs of tuberculosis. In January, 1927, Dr. Heimbeck began to inject BCG hypodermically into those probationers who, on joining the staff of the hospital, were Pirquet-negative, and who were willing to make the venture. As the diagram shows, there were 56 Pirquet-negative probationers joining the hospital this year, and of the 44 who were vaccinated only one subsequently developed clinical signs of tuberculosis, whereas five of the 12 Pirquet-negative probationers, who dispensed with BCG, subsequently fell ill with clinical manifestations of tuberculosis. The very striking difference between the fate of those Pirquet-negative probationers who were vaccinated in 1928 and those who were not vaccinated is indicated in the diagram. Of a total of 136 vaccinated nurses, only three subsequently developed tuberculosis, whereas 14 of the 34 control Pirquet-negative nurses, who were not vaccinated, developed tuberculosis. Dr. Heimbeck and his disciples have begun to give injections of BCG to Pirquet-negative persons outside the hospital, and in one district, Sollien, where this measure was begun two years ago, nearly all the Pirquet-negative inhabitants of this community, to a total of 150, were vaccinated. During this two-year period no new case of tuberculosis has occurred, whereas in the two preceding years there were five such new cases. These carefully controlled hospital experiments have reached a stage when their sponsors consider the time is ripe for advocating this measure beyond the confines of hospitals.

With regard to Dr. Heimbeck's third heading, his criticism of the present order of things is focused on the building of large and costly sanatoriums, where infectious cases are isolated only for a short period, and the provision of special homes for children threatened with tuberculosis, where an attempt is made to defer the date of infection—"a delay, the value of which is doubtful though costly." Dr. Heimbeck would stamp tuberculosis as "the most infectious disease we have," and would act according to this opinion. He recommends the earliest possible isolation of infectious cases, and to this end he advocates tuberculosis homes in which the patients can receive treatment, live and work. As matters stand at present, it is impossible altogether to avoid infection, and BCG vaccination must, therefore, be practised, preference being given in point of time to those who are most exposed to infection—i.e., children in tuberculous surroundings, and such young persons as probationers and medical students who must come in contact with infectious cases. Dr. Heimbeck would like to see the special homes for children threatened with tuberculosis radically converted into vaccination stations, to which these children would be admitted for examination (as to whether they were already infected or not) and for vaccination. Here they would remain, isolated from infectious cases, for the month or two necessary for the establishment of immunity following the vaccination. They would then be sent home, not only well, but also immune to the virulent infections to which they might subsequently be exposed. This system would enable many more children than heretofore to obtain admission to these special homes. Pending the accumulation of further experiences of the results of BCG vaccination, and the education of the community thereto, Dr. Heimbeck advocates a systematic tuberculin survey of the whole of the community, in order that exact information may be available as to

who are and who are not already infected. When this information is obtained matters would be ripe for vaccination with BCG on a large scale, a proceeding which Dr. Heimbeck thinks would usher in a new era in the campaign against tuberculosis.

IRRIGATION OF EMPYEMA CAVITIES.

DURING the last few years a good deal of progress has been made in the treatment of empyema so that the mortality has dropped considerably, especially in the acute cases which follow the streptococcal or influenzal type of disease. The two chief principles of modern treatment are: (1) to avoid an open pneumothorax—i.e., to avoid operation until the empyema has become localised by adhesions; and (2) to wash out the empyema cavity. In a paper published on p. 870 of this issue Dr. J. S. Passeron describes a new method by which this second object may be achieved. After a preliminary incision through the skin the patient is put into a bath in which the empyema is opened so that the water of the bath mingles with the pus; the wound is held open with forceps in such a way that water has free access to the empyema cavity, and the pus and fibrinous exudate are expelled into the bath. Sometimes two baths a day are given in severe cases. When there is communication between the bronchi and the empyema cavity, air can be expelled through the lung and is seen bubbling through the water. In the case of children this expulsion of air will be noticed when the child cries and affords a method of ascertaining whether or not there is a bronchial fistula. Most of the cases hitherto treated by this method have been children, and while a bath of this sort may well have proved a convenient means of dealing with them, the difficulty of moving patients into the bath would sometimes arise in the case of adults. Modern methods of irrigation give pretty satisfactory results, but those recorded in Dr. Passeron's paper are certainly promising, and, as he points out, facts should have more weight than theories.

DESERTING A CONSUMPTIVE WIFE.

A HUSBAND, summoned at Marylebone police-court last week for the desertion of his wife, made an unusual defence. He pleaded that he was acting under medical advice in living apart from her, as she was consumptive. Unimpressed by this plea, the magistrate ordered him to pay 18*s*. weekly towards the maintenance of his wife. The wife in her evidence had admitted her ill-health, but said she had told her husband all about it before the marriage. Legally, it appears, it would have made no difference if she had not told him. Marriage is not one of those contracts classified by lawyers as *uberrimæ fidei*—that is to say, contracts of the utmost good faith in which (as in the case of a contract of life insurance) one party must disclose to the other every single circumstance which might affect the other party's mind. A woman once became engaged to marry a man without telling him that she had previously been shut up in a lunatic asylum. It was held that this non-disclosure gave the man no right to break his promise to marry her, provided that she was sane at the time of their engagement. "It would be most mischievous," said Lord Kenyon in 1797 (Atkinson *v.* Baker), "to compel parties to marry who can never live happily together." Nevertheless it has been held that a man cannot escape from his promise to marry by pleading his own bad health. In Hall *v.* Wright (1858) a defendant alleged that, since his promise to marry, he had become afflicted with a dangerous illness, occasioning frequent and severe hæmorrhage of the lungs. But the judges held that this was no defence to an action for breach of promise; the lady might like to be his widow. Ill-health is a valid excuse for the non-performance of certain contracts for personal service—e.g., by a professional singer; it is not allowed to be a valid excuse for the non-performance of a contract to marry even if the ill-health be such that the performance of conjugal duties would endanger life. The lega view, it will be noticed, is not eugenic. Some day perhaps, a reform of the divorce law will allow th marriage contract to be dissolved where one part suffers from permanent and incurable mental o physical disease. That reform, however, if and whe it comes, will have no bearing upon the position of man who, having knowingly married a consumptiv wife, afterwards refuses to live with her. It is equall irrelevant to refer here to the old French traditio that callous English husbands habitually sell thei wives at Smithfield market, but students of lega and social curiosities may care to be directed to brief but interesting article on this subject from th learned pen of Prof. Courtney Kenny in the recen issue of the *Law Quarterly Review*.

MOORFIELDS EYE HOSPITAL.

ALL old Moorfields students will not only enjo reading, but will desire to possess, the story of th hospital as told by Mr. Treacher Collins. The book takes us back to 1805, when the "London Dispen sary for Curing Diseases of the Eye and Ear" wa opened in Charterhouse-square. This was practicall the beginning of ophthalmology as a surgical specialty Astley Cooper being, as it were, the godfather of th new institution, and John Cunningham Saunders it first surgeon. On the advice of the latter, the aura part of the work was soon dropped, and the nam of the institution changed to "London Infirmary fo Curing Diseases of the Eye." In 1811 the practic of the infirmary was opened to medical students, an thus was started the School of Ophthalmology, whic has since become of world-wide renown. The origina building was soon found to be too small for its require ments, and in 1822 a new building was erected i what was then called Lower Moorfields, on th outskirts of the city, the site now occupied by Broad street Station being then an open space. Here pract cally all the older generation of ophthalmic surgeon in England received their training. The Princes Victoria became patron of the institution a year befor her accession to the throne, and its name was agai altered on this account to the Royal London Oph thalmic Hospital. The work quickly grew; the sta was gradually increased and the building extende until it eventually became far too cramped for th work undertaken. In 1899 it was removed to it present quarters in the City-road, the old nam "Moorfields," with the traditions attaching to i still being in popular use. All this and much mo Mr. Treacher Collins relates; he gives us thum nail sketches of many of the surgeons whose wor has made the world reputation of the hospital. The are not many still living who can recall the personal ties of the elder Critchett and Sir William Bowma Jonathan Hutchinson, the elder, joined the staff a somewhat later date, but resigned in 1878, th refraction work of the hospital having grown arduous that he felt he could no longer carry out h duties. At that time, and for long afterwards, the were no paid refraction assistants at the hospita Since it was impossible for the surgeons to devo their whole time to the work of testing for spectacle they were largely dependent on the work of volu tary assistants, who were not all equally efficien Many will recall the great days when Nettleshi Marcus Gunn, Tweedy, the elder Lang, J. B. Lawfor and Stanford Morton were on the staff. The book w do something to keep green the memories of the and of many others. There is much in it besid sketches of the personnel of the staff. The three gre events of the Victorian epoch which affected

[1] History and Traditions of the Moorfields Eye Hospit One Hundred Years of Ophthalmic Discovery and Developme By E. Treacher Collins, consulting surgeon to the hospit With 27 plates. London: H. K. Lewis and Co., Ltd. 19 Pp. 226. 12*s*. 6*d*.

ranches of surgery were the adoption of antiseptic—ater aseptic—methods, the introduction of general næsthesia, and the birth of the new science of acteriology. From all three ophthalmology has eceived its full share of benefit, but the second ecame of relatively minor importance in this specialty fter the discovery of local anæsthesia by means of ocaine. A still more important discovery made by Helmholtz, in 1851, was that of the ophthalmoscope, vhich first rendered possible the diagnosis of deep-eated affections of the eye. The pattern most generally ised is still that to which the name of Morton is ttached. The instrument led to the differentiation ot only of the varieties of retinitis, choroiditis, and ffections of the optic nerve, but inasmuch as the etina is morphologically an outpost of the cortex f the brain, it is of inestimable value to the general hysician, and especially to the neurologist.

The influence of Moorfields on the outside world as been exerted not only through the students who ave carried its teaching with them to all parts of the English-speaking world and to India, but also by neans of the Ophthalmic Hospital Reports. This ublication has appeared at intervals since 1857, and is ow merged in the *British Journal of Ophthalmology*. Mr. Treacher Collins's scholarly book shows clearly o what extent the history of "Moorfields" is ound up with the development of ophthalmology as science and art. It is enriched by portraits of most f the notable members of the past staff. The modest mission of a portrait of the author himself, whose erm of office as surgeon lasted for 27 years, will be egretted by readers who find little else to criticise n the production.

CLEAN SWIMMING BATHS.

THE danger of the transmission of disease by olluted water in swimming baths has sometimes een exaggerated, but it does exist. This is the sane tandpoint from which the Ministry of Health has pproached the consideration of various methods of urifying bath water on a large scale, in order to dvise which is the most practical, efficient, and nexpensive. Though there is no evidence to support larmist rumours that epidemics have originated in wimming baths in this country, it is certain that athogenic bacteria can remain alive in dirty bath ater for considerable periods. It is therefore esirable that the water should be free from such acteria and that its bacteriological count should pproximate to that of drinking water. That this tandard of purity can best be maintained by the ethod of continuous rapid filtration, combined with ontinuous chlorination and aeration, is the con-lusion reached by officials of the Ministry, whose rguments in its support are set out in a pamphlet [1] igned by Mr. A. E. Sandford Fawsett, the chief ngineering inspector; Mr. H. T. Calvert, the chemical nspector; and Dr. J. Alison Glover, one of the medical fficers. The method has advantages over the fill-nd-empty system, which was the only one in vogue uring the nineteenth century, even when the water s changed daily, and is incomparably better than he treatment of the water by chemical means with-ut filtration. The filtration plant, however, must e of adequate size, and the staff in control must e properly instructed in the technique of working , and of testing (at least three times a day) the hlorine content, alkalinity, and clarity. The first f these can be easily determined by simple portable pparatus based on the orthotolidine test, a delicate olorimetric test first suggested by E. B. Phelp, and ince improved, while the reaction should be kept t a pH of between 7 and 8—that is, just to show an lkaline reaction to methyl-orange. The reaction ust be alkaline in order to neutralise the acids rmed from the coagulant (alum or aluminoferric dded to control the rate of filtration) and the chlorine, hich is best supplied in the form of gas. It is almost impossible to get clear water unless the right alkaline reaction is maintained, and this is also important if complaints of smarting eyes are to be avoided. Smarting eyes may be caused by too much alum, too much lime, or too much chlorine; the symptom is attributed usually, but often incorrectly, to the chlorine.

The success of the purification in this system thus depends not only upon the design, sound construction, hardiness and accessibility of the plant but also on the care and skill of those operating it. Moreover, the prevention of unnecessary pollution from entering the water will greatly assist the operation of the purification plant. Whether the popularity of baths would survive the rigid enforcement of the suggestions made for the cleansing of a candidate and his costume before a swim remains to be seen. It is recommended that before entering the pool all bathers should take a shower bath as well as a foot bath, and that costumes as well as towels should be washed with hot water and soap and sterilised after use. The advice that the dressing boxes shall be commodious, well lighted and ventilated and easily cleaned will be welcomed, and also that they should be arranged so that the side walks are not used by bathers before undressing, other stands and galleries being provided for spectators. The concluding paragraphs concern the desirability of keeping detailed records of the hours during which the plant is working, the time taken to wash each unit, the power consumed for the filters only, the weight of each chemical used, and the amount of make-up water taken from the mains. Notes should be added daily on the alkalinity, clarity, and chlorine content of the bath water, on any unusual condition observed, and on any defects or difficulties experienced. Only by the study of such records will it be possible to learn which type of plant will show low running costs and at the same time require little attention.

[1] The Purification of the Water of Swimming Baths. H.M. tationery Office. Pp. 52. 1s.

CHANGE OF BLOOD GROUP.

IT is accepted more or less as an article of faith that, once established, the blood group of the human being does not change. On general principles it seems unlikely that it should ever do so, but it must be admitted that few observations have been made on the groups of any large number of people over a long period, and that direct proof is therefore lacking. Recent observations by certain Japanese workers[1] afford fairly clear evidence that certain alterations in the group constitution of the blood may and do occur; but whether there can be an actual transmutation of group is another matter. These investigators record a number of cases in which, under the influence of acute infections and other toxic states, the constitution of the blood of the patients changed—so far as ordinary laboratory tests on the serum and corpuscles were capable of showing—from $A\beta$ or $B\alpha$ to $O\alpha\beta$; in other cases bloods accepted as $O\alpha\beta$ during the acute stage of illness developed either $A\beta$ or $B\alpha$ constitutions on convalescence. These observations do no more than bear out certain older ones to the effect that in ill-health the titre of the agglutinins and the sensitiveness of the agglutinogens may be lowered. But their moral is that mere examination of the serum and red cells by agglutination tests is not enough to determine a person's blood group for certain. The only way to be certain is to have recourse to cross absorption tests, and had such tests been used by the Japanese workers their results might have been different. In view of the close approximation of the calculated to the actual distribution of the blood groups on Bernstein's hypothesis it is hard to believe that the group constitution of the blood is not fixed early in life and transmitted according to Mendelian laws. But it will not neccessarily reveal itself in full to agglutination tests.

[1] Katsunuma, S., Kaneko, G., and Amagasa, S.: Proc. Imp. Acad. Jap., V. 7, July, 1929, p. 291.

THE SALE OF ARSENIC TO MINORS.

THE general secretary of the Horticultural Trades Association has questioned a statement in a recent annotation (THE LANCET, Oct. 12th, p. 780) on the sale of arsenic to the effect that arsenical weed-killers can be sold to boys of 16. He refers us to Section 2 of the Arsenic Act of 1851, the purport of which was stated in our article, to the effect that "no person shall sell arsenic to any person other than a person of full age." So far as there is any certainty in the interpretation of statutes, it would seem that this prohibition still stands. Section 17 of the Pharmacy Act of 1868 makes it clear that nothing in that Act is to repeal or affect any provision of the Arsenic Act of 1851. Similarly Section 2 of the Poisons and Pharmacy Act of 1908—the section which authorises the sale of arsenical or nicotine weed-killers by duly licensed persons—expressly saves the requirements of the Act of 1851. One would therefore be disposed to agree that the concessions as to the sale of weed-killers by general dealers have in no way negatived the prohibition in the 1851 Act against the sale of arsenic to persons under age, were it not that our learned contemporary, the *Solicitors' Journal*, whose opinion we quoted, appears to take a different view. Our contemporary's article was written by Mr. Marshall Freeman, the recorder of Stamford, a barrister with special knowledge of matters pharmaceutical. It may be that his observations were intended to emphasise the fact that, so far as the rules governing the sale of weed-killers are concerned, there is nothing to warn the distributor that he must not sell to a minor. His opinion, however, certainly seemed to justify the statement that such sales were legal. The doubt thus disclosed is a fresh indication of the unsatisfactory state of the law.

WE regret to announce the death of Dr. William Bevan-Lewis at the age of 82 years. Director for more than 25 years of the West Riding Asylum at Wakefield, and sometime Professor of Mental Diseases at the University of Leeds, he had long been living in retirement at Cardigan, his old home and birthplace.

OUR Medical Diary this week contains an abridged programme of the Conference on Mental Health to be held next week at the Central Hall, Westminster, under the auspices of the National Council for Mental Hygiene and the Tavistock-square Clinic, in association with many other organisations. Applications for tickets and other correspondence should be addressed to the Secretary of the National Council, 78, Chandos House, Palmer-street, London, S.W. 1.

As already announced, an informal "At Home" was held on Wednesday evening last, Oct. 16th, at 7, Adam-street, Adelphi, to inaugurate the removal of THE LANCET to its new home. The house being still empty the rooms were able to accommodate the large number of guests who responded to the Editor's invitation. The removal is now complete and the editing and publishing of the paper takes place from 7, Adam-street, Adelphi.

The number of students entered for the D.P.H. course at the London School of Hygiene and Tropical Medicine already greatly exceeds the earlier expectations of the director and the School Council. The special lectures for the Michaelmas term are all arranged for Mondays at 5 P.M. On Oct. 28th and Nov. 4th two lectures on Atmospheric Pollution will be given by Dr. J. S. Owens and Dr. Leonard Hill, F.R.S., respectively; on Nov. 11th and 18th Dr. Hill will speak on Sunlight and Health, and Clothing and Climate; and on Nov. 25th and Dec. 2nd Mr. J. C. Dawes will deliver three lectures on Disposal of Refuse. All these lectures are open to the public and we hope to publish in due course the programmes for the other terms of the academic year.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation

XLIX.

URETHRAL AND VAGINAL DISCHARGES.

ALTHOUGH the trained clinician can usually diagnos with some accuracy the cause of a urethral or vagina discharge, and foretell within limits what the bacterio logical findings are likely to be, the assistance of a expert bacteriologist is of definite value. Withou laboratory methods gonorrhœa cannot be definitel established nor excluded as the cause of the discharge Microscopical examination of the urethral and cervica smears is, moreover, helpful as a means of assessin the effects of treatment and of judging improvemen in this disease.

Technique of Collecting Samples.

For the examination to be of value to the clinician it is essential that the material for examination shoul be taken correctly; much waste of time is incurre by submitting indifferently or carelessly take specimens for investigation. The gonococcus i seldom found in large numbers in the female genito urinary tract, and it is an organism which possesse little tenacity of life when removed from its norma habitat. These two facts form the basis of th technique of film and culture taking in moder venereal clinics. In chronic cases positive results ar more likely to be obtained immediately after cessatio of the menstrual flow. If cultures are desired it i important to avoid delay in transferring the cultur tubes to the incubator. Not more than one hou should elapse between the collection of the sample an the introduction of the tube into the incubator.

For the collection of the pus the patient is placed for preference, in the lithotomy position, and a bea of light from a head lamp or from other suitabl source is focused on the vulva.

The *urethral sample* should be taken as long a possible after the patient has last passed urine. Th ideal is five hours and upwards after micturition, bu this time cannot always be allowed to elapse sinc frequency of micturition is a feature of some cases i which bacteriological examination is required.

The labia being held apart, the vulva is swabbe from before backwards, in order to remove th possibility of contamination with vulval organism Since the favourite resting place of the gonococcus in the higher reaches of the urethra that chann should be milked from above downwards through th anterior vaginal wall by means of a gloved finger. Th sterilised platinum loop is then introduced into th urethra and subsequently smeared on to a glass slid or on to the hydrocele-fluid agar, or other suitab medium, if a culture is desired.

Vaginal films, or cultures, are of little value in th adult, except possibly in virginal vaginæ; indeed is of the utmost importance to avoid contaminatio of the cervical smear by vaginal organisms, which a apt to lead to confusing results. It is most unlike that the gonococcus will be found in the vaginal pu of adults, while there exist in this situation oth organisms which may be mistaken for it.

Cervical films.—In all cases of purulent vagin discharge, except in young children, the material t be examined must be taken from the interior of th cervical canal. The cervix is exposed with a bival or other speculum which will ensure exclusion of th vagina. The fornices and the vaginal cervix are the mopped dry with gauze swabs on holders, the steri loop is introduced into the canal of the cervix, and th

material thus collected is smeared on to a glass slide or culture medium. If preferred, the ordinary cotton-wool throat swab on a stilette may be used in place of the platinum loop; but if this is used there must be no delay in smearing the slide or culture medium.

Bacteriology.

The *gonococcus*. The finding of an *intracellular*, reniform, Gram-negative diplococcus in this situation is positive evidence that the patient is suffering from gonorrhœa. The finding of *extracellular* characteristic diplococci is, in the overwhelmingly large majority of cases, positive clinical proof that the gonococcus is the infecting organism. It is worthy of note that a positive urethral result is of more value than a positive cervical film. For medico-legal purposes both the meningococcus and the *Micrococcus catarrhalis* should be excluded by their different fermentative reactions. The gonococcus can often be identified by culture, although the smears have failed to yield a positive result.

The *staphylococcus* is commonly found. Occasionally cases of profuse purulent vaginal and urethral discharges are met in which this organism is found alone or in association with diphtheroid bacilli. If repeated examinations fail to reveal the presence of the gonococcus, a diagnosis of staphylococcal urethritis or cervicitis can be made. Such infection is apparently not communicable to the male and rapidly responds to treatment. But the chief importance of the staphylococcus lies in the fact that in its degenerate forms, which have lost the capability of taking Gram's stain, it is sometimes confused with extracellular gonococci. These degenerate, Gram-negative staphylococci are to be distinguished from gonococci by being members of a group, the majority of which are Gram-positive. Their morphology when dividing is, moreover, characteristic.

The *colon bacillus*. Like the staphylococcus, this organism is frequently found in films, particularly in those made from the urethra. It may be the cause of urethritis, the infection being of hæmatogenous origin, and arising as a primary infection in the pelvis of the kidney, or in the bladder as the result of the passage of an infected catheter. In its atypical coccoid forms it may be mistaken for the gonococcus; but in such cases typical bacteria will be seen as well and all gradations in size exist, from the Gram-negative bacillus to the atypical coccoid types. The coccus, moreover, is of larger size than the gonoccocus, and does not possess the typical reniform shape.

The *streptococcus*, in various forms, is found with considerable frequency, especially as a secondary invader, in cases of gonorrhœa, and, of course, in primary streptococcal vaginitis, cervicitis, and urethritis. If the lesion is a *vaginitis* as distinct from a *cervicitis*, the causative organism is almost always the streptococcus. When the urethra is affected the urethritis is associated with cystitis or pyelitis, while in cervicitis streptococci are frequently found in the presence of post-parturitional cervical ulcerations. There is little clinical difficulty in differentiating between the infected cervical laceration and the gonococcal erosion of the cervix. The short-chained variety of streptococcus is the commonest. The identification of the hæmolytic streptococcus during pregnancy is of great importance. Its association with puerperal septicæmia is well recognised, and has recently been stressed by I. Burt-White.

The *bacillus of Döderlein* is a large Gram-positive bacillus, often present in the vagina. It does not grow on the ordinary culture media, and it has no pathogenic properties.

Other organisms.—In cases of tuberculosis of the genital tract, excluding primary tuberculous salpingitis, the *Bacillus tuberculosis* may be present in the cervical smears, while, in cases of tuberculosis of the urinary tract, this organism may be found in those from the urethra. In either case it must be distinguished by its acid-fast properties from the smegma bacillus. The *Klebs-Löffler bacillus* is found in the rare cases of aphthous vaginitis. *Diphtheroid bacilli* are relatively common in the vagina, and possess no pathological significance. The *thrush* infection is again rare, but may be surmised in those cases possessing the well-known appearance of oral thrush. Films will show the presence of oidium albicans. The *pneumococcus* is uncommon. It is an occasional cause of hæmatogenous or descending urethritis. In children between the ages of three and ten years the alkaline vaginal reaction and the increased size of the lumen of the vagina make this passage the *via portialis* in cases of primary pneumococcal salpingitis, which, as McCartney and Fraser have shown, is the almost invariable antecedent of pneumococcal peritonitis.

Cytology.

Normally shreds of mucus and squamous epithelial cells are found. The only cellular elements other than these result from inflammation, from ulceration, and from tumour formation.

Inflammation produces excessive desquamation, with increase in the squamous epithelial cell content and the presence of pus cells. In the absence of a positive gonococcal culture, the presence of a preponderance of pus cells over epithelial cells, taken in conjunction with suggestive clinical findings, is sufficient to warrant the institution of the treatment for chronic gonorrhœa.

Ulceration.—The findings in this case are pus, blood, and epithelial debris, which may be in clumps. The causative organism will also be found.

Tumour formation.—The malignant growths of the cervix—carcinoma and sarcoma—produce a blood-stained vaginal discharge in which epithelial and connective tissue elements respectively may be found in conjunction with pus and blood cells. By the time carcinomatous or sarcomatous cells make their appearance in the discharge the growth is almost invariably of such dimensions and of such characteristic nature that it can be diagnosed by ordinary clinical methods. The growth at this stage is always secondarily infected. In patients over 50 years of age the possibility of a discharge being due to carcinoma of the body of the uterus must not be overlooked. The findings are similar to those in carcinoma of the cervix, but the secondary infection is usually not so heavy.

Discharges in Children.

In adults the causative lesions, in the majority of cases in which the patient complains of a discharge are urethritis and cervicitis, occasionally vaginitis. In children, on the other hand, the lesion is vulvo-vaginitis. Any of the organisms previously mentioned may be found, particularly the pyogenic bacteria in cases owing their origin to uncleanliness or to the presence of foreign bodies. Parasites and thread-worms are sometimes found, while the disease occasionally occurs as a complication of one of the acute specific fevers. The only place in which the gonococcus is likely to be found is in the vaginal or vulval discharge, whereas in adults the urethra and the cervix are the most likely sites. A determined search must be made and if the bacillus is found a real effort should be instituted to examine all the other members of the family.

The mode of infection in children is sometimes, but not always, by rape. Vulvo-vaginitis spreads rapidly in a family of poor children, and occasionally in a school. Infection in such cases is probably conveyed by the use in common of washing utensils, towels, sponges and lavatories, or by several members of a family sleeping in the same bed.

Discharges during Pregnancy.

It is well known that during pregnancy there is an increase in the physiological secretions; similarly, all pathological discharges become accentuated. The two important organisms for which repeated search

should be made are the gonococcus and the hæmolytic streptococcus; the former on account of the danger of ophthalmia neonatorum, the latter because of its relationship to puerperal septicæmia. Primary staphylococcal infections are not uncommon during pregnancy, and give rise to a very profuse discharge which, as has been mentioned, is of relatively little importance.

Criteria of Cure.

A patient can be judged cured of gonorrhœa when, in the absence of all clinical evidence, notably vaginal discharge, the bacteriologist fails to find gonococci in films and cultures from the urethra and cervix on three successive occasions at monthly intervals. It is advisable to conduct a fourth examination two to four months later. Judged on this basis the treatment of gonorrhœa in the female yields very promising results, but the criteria can only be fairly applied to those patients who attend regularly, not to say enthusiastically, for treatment, and who obey to the letter the instructions they receive concerning, for example, marital relations, alcohol, and other excesses. Pessimism is only justified if it takes these factors into account. The reputation of every clinic suffers from the patient who, finding her daily visit irksome, begins to attend less and less frequently, and finally ceases to attend at all. Some patients find it impossible, for fear of detection, to carry out advice. Others are married to husbands who refuse treatment. And so on. There are a hundred and one reasons why a woman cannot do as she is bid. The same reasons explain, and to some extent justify, pessimism.

The complement-fixation test is unreliable, and all authorities are agreed that provocative vaccines are valueless as a means of assessing cure in the female.

From the point of view of cure cases fall into three groups:—

(*a*) Cases in which, clinical manifestations being absent, three successive bacteriological examinations fail to reveal the presence of the gonococcus. Clearly nothing requires to be said of this group.

(*b*) Cases in which repeated bacteriological examinations fail to demonstrate the presence of gonococci, but in which a chronic discharge persists. Secondary invaders, streptococci or staphylococci, are frequently found in considerable numbers, while the discharge contains a high percentage of pus cells. Patients in this group cannot be taken as cured, and the discharge must continue to be regarded as gonococcal, provided the gonococcus was found in the films or cultures at some past examination, however long ago. Repeated search by a skilled clinician working in conjunction with a skilled bacteriologist will, in the large majority of cases, be rewarded with success, and the gonococcus will be found even after a long series of negative examinations. The power of secondary invaders to maintain or to cause a recrudescence of the discharge is extremely dubious. If treatment has effectively eradicated the gonococcus the secondary organisms will have perished. Failure to find the gonococcus usually is due to the fact that the organism lies buried in the deeper crypts and so eludes detection, unless the utmost care and patience are observed in taking the material for examination and in the examination of that material.

(*c*) Cases in which clinical manifestations cease and in which bacteriological examination is negative on three successive occasions, but in which the discharge, with or without other symptoms and signs, reappears at intermittent intervals. Such cases are very similar to those described in the previous paragraph. The gonococcus, if carefully sought, should be found. When not due to reinfection, such a discharge is, as in the male, usually due to some exciting excess, alcohol, chill, intercourse, and the like.

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Special Articles.

THE BROWN *v.* WHITE BREAD CONTROVERSY.

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So far the brown versus white bread controversy has engendered more heat than light. The upholders of brown bread maintain that brown bread is better than white because it contains more protein of a higher biological value,[1] more vitamin B 1 [2]—the antineuritic vitamin—more mineral matter,[3] and more roughage.[4] The protagonists of white bread, while admitting all these points, maintain that an ordinary mixed diet contains so much of these commodities that the deficiencies of white bread are amply compensated[5] and point to the overwhelming instinct of the working classes (which, of course, may be mere prejudice) in favour of white bread as mute and inarticulate evidence of its dietetic value.

The controversy has been complicated by the advent of patent germ breads which have relatively large proportions of the germ of wheat (obtained from the milling of white flour) added to the white flour from which they are made. Such breads contain still more protein of higher biological value, more antineuritic vitamin (B 1)[6] and more toxamins,[7] the poisonous substances discovered in cereal germs by Edward Mellanby. Such toxamins necessitate the addition of more fat-soluble vitamins to counteract their poisonous influence—i.e., demand more milk and butter in the diet, things which the working classes are wont to deny themselves. A still further complication has been introduced by the recent separation of vitamin B [8] into two moieties, B 1 (the antineuritic vitamin) and B 2 (the antipellagric vitamin), and our consequent lack of knowledge of the distribution of these in foodstuffs other than wheat germ and yeast in which their presence has been fully investigated. The adumbration of still further moieties [9] of vitamin B renders the problem still more involved.

At the present it may be taken as certain that brown—i.e., wholemeal—bread contains more protein of good biological value, more vitamin B 1, more mineral matter, more toxamins, and more roughage than white bread, while it contains approximately the same amount of vitamin B 2.

It is very difficult arguing from these data to assay the value of these three types of bread in human nutrition; in fact it may be said at once that nothing but experiments made directly upon human beings will be satisfactory or acceptable to either group of protagonists—long and costly experiments on the lines of those made under the auspices of the Medical Research Council and the Ministry of Health by Dr. Corry Mann [10] upon the value in nutrition of milk. We venture, however, to report an experiment made upon the respective values of brown and white breads incorporated in a mixed diet based upon the analyses of the diet of agricultural labourers in Essex [11] when fed to the laboratory rat.

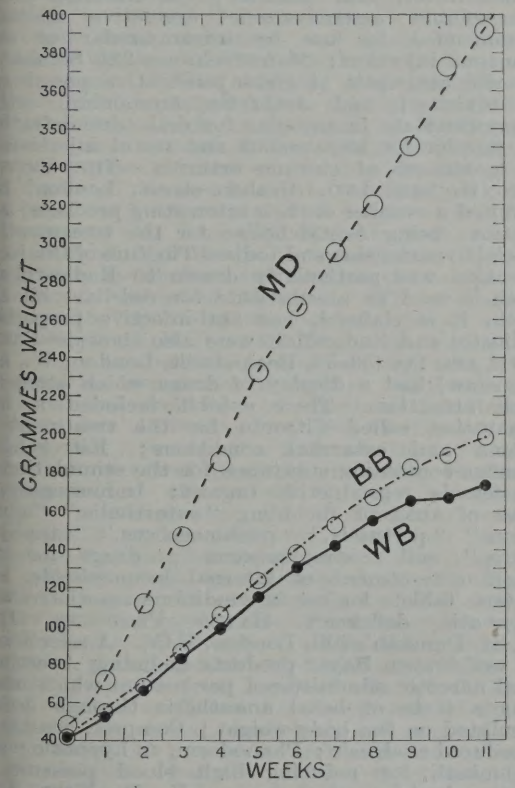
Experimental Diets.

The diet in question comprised meat, potatoes, vegetables such as beetroot, cabbage, carrot, cucumber (raw), lettuce (raw), green peas, tomato (raw), turnip, sugar, bread, cheese, margarine, lard, milk, bacon and eggs. The proportions were chosen so that they tallied as nearly as possible with the amounts of these foods used by agricultural labourers. The interpre

ation of "other vegetables" [11] was left to the discretion of the assistant who was in charge of the animals. The amounts used were in the proportion of meat 10 parts, potatoes 59, vegetables 16, sugar 11, bread 95, cheese 2·5, margarine 4·5, lard 2, milk 20 (by volume), 170 (by volume) of water. Streaky bacon was given twice a week instead of meat and one-quarter of an egg per week beaten in a known portion of the milk and pipetted off. The vegetables were cooked with salt as is usual, the potatoes being cooked separately. The raw vegetables were chopped finely, the tomatoes being skinned first by pouring boiling water over them.

As the food was served ad lib. in the special feeding dishes devised by one of us (G. A. H.) it had to be prepared in the form of a finely divided pulp so that there was no chance of the animals, taking more of one thing than another. The method adopted was as follows: the weighed meat and cheese together with five parts of water to one of meat, and a pinch of salt, were heated in the inner compartment of a double saucepan, with rapidly boiling water in the outer, till the meat turned colour (i.e., it was very lightly cooked). During this short period the mixture was rapidly and constantly stirred. This breaks up the meat into tiny fragments. Into the mixture the fat was stirred. Then the bread was added. The sugar was dissolved in 120 parts of water and poured rapidly over the bread. The mixture was well beaten. The vegetables, which had been previously

FIG. 1.



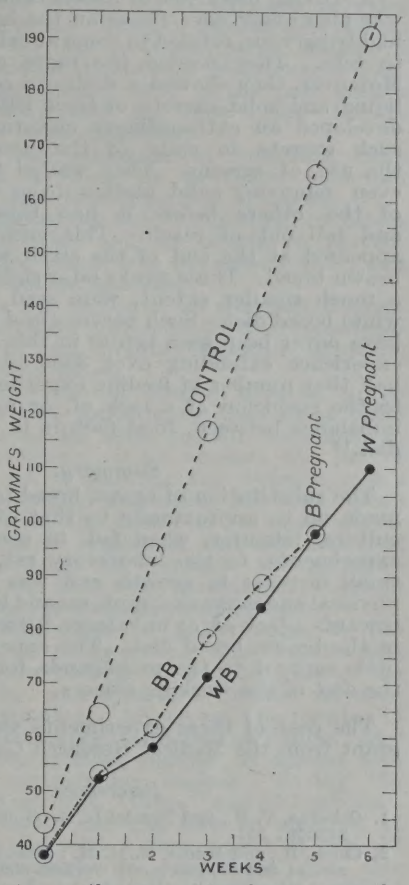
The growth curves of male rats upon the brown bread (B.B.) and white bread (W.B.) diets respectively, with a control curve of the rate of growth of normal male laboratory animals (M.D.) at the same period of the year.

cooked and thoroughly disintegrated, were added and the whole again beaten together. Last of all the milk, with or without the portion of egg, was added with further beating. When raw vegetables were given they were incorporated with the mixture at the end.

The total amount of mixed food was adjusted to the appetites of the animals, enough being given to leave a small surplus each day.

Twelve animals were used in each experiment, six bucks and six does. One group of 12 were fed on a diet with white bread and the other with brown bread in the mixture. Each buck on the white bread diet was matched against a litter brother of the same weight on brown, and each doe with a litter sister. The average weight was therefore identical and the litter control complete. The animals were three weeks old at the beginning of the experiment and weighed 40·7 g. (bucks) on the average and 38·3 g. (does) respectively. The experiment ran for 77 days for the bucks and until 10 of the 12 does had produced a litter. The animals were weighed and carefully inspected every day and the growth curves of the males and females are given separately in Figs. 1 and 2. As a control in each case the average growth rates of the stock laboratory animals, male and female respectively, on a mixed middle-class diet are also given.

FIG. 2.



The growth curves of female rats upon the brown bread (B.B.) and white bread (W.B.) diets respectively, with a control curve of the rate of growth of normal female rats at the same period of the year.

Inspection of the curves shows that the males receiving the brown bread diet grew somewhat more rapidly than those on white, though both sets are far behind the normal growth rate on a middle-class mixed diet. This slight advantage in favour of the brown bread diet for males tallies with the results of earlier work.[12 13] Between the females on the brown bread diet and those on the white there is little to choose. When the experiment closed the weights were almost identical in each set, but at intermediate points there had been a slight advantage in favour of the brown bread diet. Moreover, those on the latter diet littered a week earlier than those on the white bread diet.

Condition and Habits of Dieted Rats.

The most that can be claimed for these growth curves is that the substitution of brown for white bread appeared to improve this diet though it brought it by no means near the value of a middle-class diet. This improvement may easily have been due to the coprophagy which developed in those on brown bread (vide infra), for other criteria counterbalanced this increased growth rate.

The routine inspection of the animals showed as regards their physical state the usual signs of defective nutrition, especially the slow growth, the loss of hair (later partly regained), and the lightening in tint of the black patches to grey or fawn previously described.[14] At the end of the second week the hair had begun to fall and this was more noticeable in those on the brown bread diet than those on the white. At the end of the fifth week the lack of colour of hair was seen, and again the brown bread animals suffered more than the white. The hair was normal in quantity in neither set of animals at the end of the experiment. Nine animals on the brown bread diet

and two on the white showed incipient xerophthalmia. The teeth were poor, dull, and opaque in appearance, and worse in those on the brown bread diet. Both sets of animals had the prematurely aged appearance of rats on a poor diet.[15]

A striking difference in habits between the two sets was also observed. Those on the brown bread were highly nervous, refused to come at call, and threatened to bite. They needed the more careful handling. Moreover, they showed a desire to consume both the liquid and solid excreta of their fellows, and in time developed an extraordinary cleverness in obtaining such excreta in spite of the usual technique of the use of screens. They waited for the excreta, even removing solid matter from the anal canals of the others before it had time to be voided and fall out of reach. This curious phenomenon appeared at the end of the sixth week in those on brown bread. Three weeks later signs of it, though to a much smaller extent, were seen in those on the white bread diet. Such nervous and gustatory habits have never been seen before in this laboratory in an experience extending over 3300 litters with about half that number of feeding experiments. They lead to the suspicion of a lack of, or more probably an imbalance between, food factors in the brown bread diet.[16]

Summary.

The substitution of brown bread for white in a diet made up to approximate to that of the Essex agricultural labourer, when fed, in carefully controlled experiments, to the laboratory rat, resulted in but small increase in growth and was accompanied by physical and nervous symptoms and by habits pointing towards a lack of, or imbalance between, food factors in the brown bread diet. The experiments give but little support to the propaganda for brown bread in the diet of the working classes.

The cost of these experiments was defrayed by a grant from the Medical Research Council.

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THE LONDON MEDICAL EXHIBITION.

THIS exhibition, which for many years has been held at the Central Hall, Westminster, has so grown both in regard to the number of exhibitors and in attendance that the organisers have been compelled to move to larger premises—namely, to the New Hall of the Royal Horticultural Society in Greycoat-street, Westminster. The exhibition closed at the end of last week after a record attendance of medical men both from this country and from overseas, who were enabled thus to measure the progress which has been made in the production of drugs and in the improved excellence of British-made surgical instruments. In the space at our disposal it is possible to mention a part only of some 170 stands, while drugs, foods, and surgical instruments so overlapped—some of the exhibitors catering for several branches of medicine and surgery—that only a general classification can be made.

DRUGS AND PHARMACEUTICAL PREPARATIONS.

BURROUGHS WELLCOME AND CO. (Snow Hill-buildings, London, E.C.), in an attractive exhibit, prominently displayed "Tabloid" Alkaline Compound Effervescent, a therapeutic agent which may be used (1) as an antacid draught, (2) to correct hypo-alkalinity associated with gastric disturbance of various kinds, or (3) to restore the alkaline balance and assist remineralisation in the condition now known as acidosis; "Kepler" Malt Extract, an important source of vitamin B, and "Kepler" Cod-liver Oil with Malt Extract presenting vitamins A, B, and D in their natural form and association; and "Tabloid" Brand Hypodermic Bulbocapnine Phosphate, an adjunct to the treatment of certain phases of epidemic encephalitis. A mortality chart recorded the results of insulin treatment on 1316 patients and indicated how case-fatality has decreased as a result of improved technique.—MAY AND BAKER, LTD. (Battersea, London, S.W.), had a large display of drugs, including Novarsenobillon ("914") for all stages of syphilis and valuable also in yaws, malaria, rat-bite fever, and anthrax; Metarsenobillon, a water-soluble arsenobenzene derivative specially recommended for use by intramuscular or subcutaneous injection; Mercurochrome-220 Soluble, a powerful antiseptic of great penetrative power and low toxicity; and Arthrytin Ammonium ortho-iodoxy-benzoate in capsules for oral administration, and powder for intravenous and rectal injection in the treatment of chronic arthritis.—THE BRITISH DRUG HOUSES, LTD. (Graham-street, London, N.), exhibited a number of their interesting products, new additions being Acetylcholine for the treatment of arterial hypertension and Iodised Tincture of Guaiacol. Attention was particularly drawn to Radiostoleum which is used as a substitute for cod-liver oil and which, it is claimed, has anti-infective properties. Radiostol and Radio-Malt were also shown.—PARKE, DAVIS AND CO. (50–54, Beak-street, London, W., and Hounslow) had a display of drugs which attracted much attention. Their exhibit included a new preparation called Citronin for the treatment of asthma and catarrhal conditions; Estrogen, a hormone-containing substance for the stimulation of the female reproductive organs; Immunogens, a series of antigens including "catarrhalis," "gonococcus," "pertussis," "pneumococcus," "staphylococcus," and "streptococcus"; drugs for the injection treatment of internal hæmorrhoids, and panteric tablets for use in conditions associated with pancreatic deficiency.—BAYER PRODUCTS, LTD. (19, St. Dunstan's-hill, London, E.C.). A selection of the well-known Bayer products including Avertin, a basal narcotic administered per rectum which maintains a state of basal anæsthesia through dosage calculated on the body-weight; Compral, a recently introduced analgesic; Phanodorm, an hypnotic; and Theominal, for reducing high blood pressure in arterio-sclerosis, were shown.—H. R. NAPP, LTD. (3 and 4, Clement's-inn, Kingsway, London), among other preparations showed Anzypan, a new product intended for the treatment of dyspepsia, embodying both gastric and intestinal enzymes in a form which ensures the release of the gastric enzymes in the stomach and of the intestinal enzymes in the bowel. Put up in the form of "a tablet within a tablet," the interior tablet contains intestinal ferments and is surrounded by a coating which is only soluble when in contact with the alkaline medium of the bowel; Normacol, an intestinal evacuant of vegetable character which gives both bulk and emollience, and thus ensures regular function; Ephetonin, a synthetic ephedrine for the oral treatment of bronchial asthma, hay-fever, and allergic conditions; and Bulbocapnine, an alkaloid of *Corydalis cava* for the treatment of

hyperkinetic conditions (paralysis agitans, chorea, &c.). It has also been found of value in the treatment of behaviour disorders of children in post-encephalitic conditions (vide an article in THE LANCET, May 11th, by Dr. T. R. Hill).—THE HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD. (51, Bowes-road, London, N.), showed a series of preparations including Allonal allyl-isopropyl-barbiturate of dimethyl-amino-antipyrine, a synthetic, non-habit-forming hypnotic and analgesic, which relieves pain and gives sleep, not only in nervous insomnia but in pain insomnia. It contains no morphine, heroin, or opium derivatives; Omnopon, an opium derivative in which the whole of the opium alkaloids are presented in the form of soluble hydrochlorides; and Sedobrol, sedative bouillon in tablet form.

ALLEN AND HANBURYS, LTD. (Bethnal Green, London, E.), had an imposing display of their various drugs and foods including the well-known "Byno" series of tonics: Pitibulin, pituitary (posterior lobe) extract; Crismol, a pure medicinal paraffin; liver products for the treatment of pernicious anæmia; and Cremor Alkalinus for the intensive alkaline treatment of gastric and duodenal ulcer. It is prepared in two forms: (*a*) sod. bicarb. 2 parts; mag. carb., 4 parts; calcium carb., 4 parts; bismuth carb., 1 part; and (*b*) sod. bicarb., 2 parts; mag. carb., 3 parts; calcium carb., 4 parts; bismuth carb., 2 parts; where formula (*a*) proves to be too laxative in effect, the proportion of magnesium carbonate being decreased and that of bismuth carbonate increased.—VITAMINS, LTD. (38, Danemere-street, London, S.W.), exhibited their vitamin food Bemax, which is prepared from the embryo of cereals and possesses a high concentration of B-vitamin as well as a large amount of E-vitamin, and is indicated in constipation, rheumatism, depression, and gastric and duodenal ulcers. It can be taken in milk or in any breakfast food, or eaten with soup or stewed fruit. —PROMONTA CO., LTD. (127, Regent-street, London, W.), showed New-Promonta intended to stimulate the general metabolism and increase the calcium and phosphorus content of the blood. The preparation contains the lipoids of the central nervous system with vitamins A, B, D, and E, lime, iron, hæmoglobin, and soluble lacto-albumins and carbohydrates. It is indicated in neurasthenia, fatigue, insomnia, malnutrition, and conditions of functional insufficiency. FASSETT AND JOHNSON, LTD. (86, Clerkenwell-road, London, E.C.), presented a wide selection of medical and pharmaceutical products including Phyllosan, pharmacological chlorophyll for use in anæmia, debility, convalescence, and all forms of wasting diseases and cardiac affections. Medicinal plasters, dressings, and surgical requisites were also displayed, and attention was particularly drawn to Mead's rubber adhesive plaster which is wound in various widths on a common spool.—PEARSON'S ANTISEPTIC CO., LTD. (61, Mark-lane, London, E.C.), exhibited Hycol, a strong germicidal disinfectant with low toxicity prepared from coal-tar oils, which has a Rideal-Walker coefficient for *B. typhosus* 18–20. It is suitable for dental, medicinal, and surgical uses. Iodine-Medol, a non-toxic and non-irritant antiseptic ointment, was also shown.—SCHERING, LTD. (3, Lloyd's-avenue, London, E.C.), made prominent Veramon, an analgesic whose pain-relieving effects, especially post-operative pain, were emphasised; Atophan, a remedy for gouty and rheumatic conditions; and Medinal, a hypnotic and sedative with absence of cumulative effect; and Vasano, for the prophylaxis and cure of train-, air-, car-, and sea-sickness, also received attention.—HOWARDS AND SONS, LTD. (Ilford, near London), made a special feature of their standard Ether manufactured from duty-free rectified spirit, which is sold at the same price as was formerly charged for ether made from rectified spirit. Agotan Ointment was also prominently displayed, and many fine chemicals such as quinines and quinine derivatives, aspirin, calomel, calcium lactate, and so forth.

(*To be continued.*)

THE OLYMPIA MOTOR SHOW, 1929.

(FROM A CORRESPONDENT.)

THE 1929 Motor Exhibition at Olympia provides striking evidence of the efforts of the manufacturers:

(1) To allow for the average man's dislike of giving his car periodic attention. Maintenance jobs, such as "greasing-round," have in the past been a much shirked duty and are now being largely eliminated or at least simplified.

(2) To make the sensation of motoring more luxurious. This he does by providing smoother running engines and improving the springing.

(3) To take discomfort out of motoring, by better seating accommodation and by efforts to prevent the entry of engine fumes into the saloon body, and so to abolish the saloon headache.

(4) To provide the motorist, as standard fittings, with devices which have until recently been considered accessories to a car, notably radiator shutters, bumpers, and safety glass.

These tendencies are of special interest to the doctor, who has less opportunity than most other professional men to set aside regular occasions to give his car attention; if he neglects the rite of the grease-gun, he is showing the average man's dislike of a thoroughly disgusting job with much more excuse. When the doctor is an owner-driver his car is liable to be neglected, and any action of the motor-car designer to eliminate the penalties of that neglect is therefore acceptable. Certain labour-saving developments are recorded below.

The general refinement of performance in the 1929–30 models is noteworthy. The outstanding characteristic of the Show is the increased use of the six-cylinder engine, and this is a distinct advance towards sweeter running. A year ago the number of makes of car on the market compared as follows: 34·6 per cent. with four-cylinder engines, as against 49·6 per cent. with six-cylinder engines. To-day the difference is: 26·8 per cent. "fours" and 52·5 per cent. "sixes." Six-cylinder cars can now be obtained at prices from £190 and with a horse-power of from 12 upwards. Improvements in suspension are also noticeable and are due to detail alterations to springs and shock absorbers.

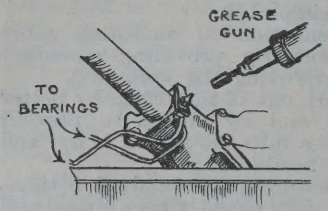
Less Noise and Better Ventilation.

Further, to lessen the fatigue of one who has to spend many hours daily in a car, efforts are being made to reduce the noise which frequently emanates from the gear-box. Four-speed gear-boxes are becoming more popular than three-speed boxes, and on some of the cars at Olympia four-speed boxes are provided in which the third speed is claimed to be as quiet as the top gear. These include Graham-Paige and (which were so equipped last year) Humber, Chrysler, Delage, Darracq, Riley, and the new M.G. Advance in gear-box design is also bringing about easier gear changing. The 12 h.p. Austin, for example, is now much easier to change between third and top gears. The admirable "self-changing" gear-box is again shown by the Armstrong Siddeley Company. This is fitted as an extra on the 20 h.p. and 30 h.p. models, but eventually, when factory arrangements permit, this box will be available for all the models. This company is now making only six-cylinder cars, the smallest of the range being the 12 h.p. model, the saloon price of which is £285.

It is extraordinary that in an age when the importance of abundant fresh air and sunshine is receiving unpredecented public recognition, the open motor-car body should be apparently on the verge of extinction. At Olympia this year there are fewer open bodies on view than ever, and most of those displayed are on sports types. Few saloons, however, are adequately ventilated, and on a long journey the choice is frequently between a draught and a headache. The fumes from the engine, which tend to percolate into the body, appear to affect different people in different

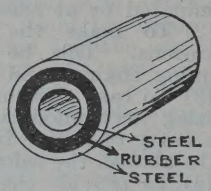
degrees, but to some a journey of 50 or 100 miles in a saloon car (unless it be in one of the rare well-ventilated types) causes general malaise. If some designer would seriously turn his talent to producing a really leak-proof, non-rattle, inexpensive and rapidly erected hood, possibly open cars would come back into general favour. Meanwhile, on the new 16 h.p. six-cylinder Singer (which takes the place of the previous Senior model, and is the lowest

FIG. 1.



Nipple on the steering column of the Swift, for greasing ten points simultaneously.

FIG. 2.



A Silentbloc bearing.

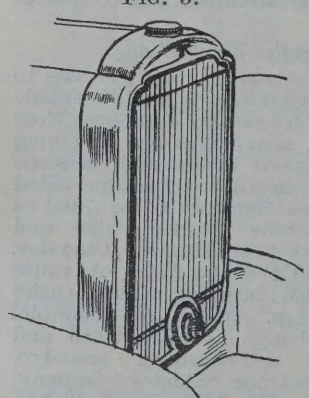
price British six-cylinder car, at £275 for the saloon) glass ventilator panels are provided over the windows. The 2/3 seater (Fig. 6) is £240. An ambitious effort to improve the atmosphere inside a saloon car is to be found on the new 15 h.p. Morris Oxford Six (saloon £285). The engine of this car is equipped with a device enabling it to consume its own fumes.

The sunshine roof, if carefully designed, is a useful compromise between the saloon body and the advantages of the open car. Its popularity continues. The Singer design has dropped out, but other makers have improved their designs.

Easy Starting.

The gradual tendency to provide radiator shutters as a standard fitting is welcome. For a doctor who makes journeys involving frequent stops the provision of radiator shutters is essential. The function of these shutters is to keep the temperature of the engine at the most efficient point as nearly as possible, and so to ensure easy starting in winter time. Radiator muffs may be used for this purpose, but they are not nearly so satisfactory as shutters which are either automatic or controlled by hand from inside the car. Automatic shutters, which are to be preferred, are operated by a thermostat which causes them to open in proportion to the increasing heat of the engine and to close the shutters as the engine cools down.

FIG. 3.



The new Buick radiator, with automatic shutters.

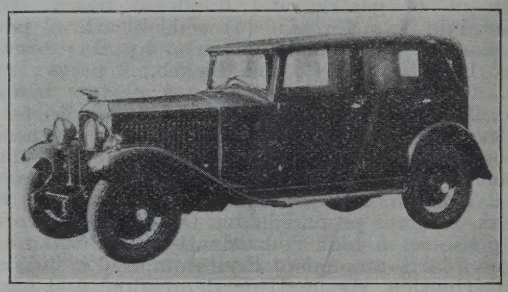
Easy starting is essential to the doctor, and the vogue of coil ignition is therefore important. The magneto system is rapidly losing its popularity, and 60 per cent. of the cars now on the British market employ coil ignition. This is reverting to the system of many years ago, and because motorists in those days had a great amount of trouble with their coil ignition this system is having to overcome a good deal of prejudice. Coil ignition to-day, however, is greatly improved. Its early defects have been cured, and the fear of being stranded owing to failure of the car battery (on which the ignition system depends) need not be entertained with modern batteries, so long as they receive reasonable attention. Coil ignition gives some slight improvement in easy starting and slow running compared with the magneto system.

Easy Greasing.

The 12 h.p. and 16 h.p. Austins employ one of the systems to simplify chassis greasing. The shackles of the road springs are fitted with Silentbloc bushes (Fig. 2), in which hard rubber is sandwiched between the fixed and moving elements of each bearing, so that no lubrication is required between them. The rubber has to take the stress of the constant flexing of the bearing, but according to the makers this torsion has not had any deleterious effect on the rubber during the two or three years that these bearings have been on the market. This year Silentbloc bushes have jumped into popularity, and they are now fitted to A.C., Austin, Alvis, Ascot, Citroen, H.E., Hillman, Humber, Riley, Rover, Standard, Talbot, Trojan, and Triumph cars. They do not, of course, eliminate the job of "greasing round," but they greatly reduce the number of greasing points.

Another and more complete method of tackling the greasing problem is illustrated, among others,

FIG. 4.



The Vauxhall 20/60 Velox Fabric Saloon.

on the Singer Super Six. This car has a larger engine than the new six-cylinder model, but the tax is the same (£16). One-shot chassis lubrication is fitted; in this system all the greasing points on the chassis (hitherto lubricated by hand with a grease gun) are connected by piping to a central oil reservoir. By depressing a pedal which operates a plunger in this reservoir, oil is forced to all the points. The price of this saloon is £350.

On the interesting redesigned 40/50 h.p. Rolls-Royce one-shot lubrication is provided to all the chassis bearings except those on the two axles, which are connected by piping to a single accessible grease-gun nipple. This decentralised system has been used in order not to involve the use of flexible tubing between the chassis and the axles.

The redesigned Swift shows how, on a lower price type of car, some of the benefits of one-shot lubrication may be obtained without going to the expense of the complete system. On this much improved car the ten most inaccessible bearings are connected to one central greasing nipple at the foot of the steering column (Fig. 1). The grease gun has to be applied to this nipple, while the more accessible points are greased with the gun in the usual way. The saloon is £260.

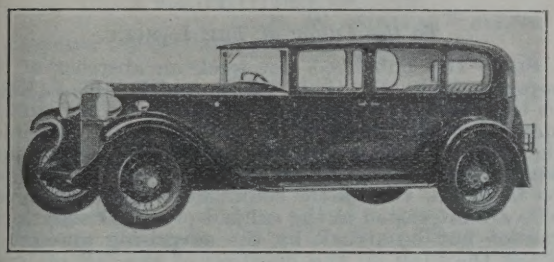
The Buick represents another method. On this car the greasing is by grease gun, but the nipples are grouped together in a small number of accessible places, each nipple being connected to its bearing by piping. The 1930 Buicks have a number of improvements. Automatic radiator shutters are included in the specification (Fig. 3). These cars are big and powerful, the six-cylinder engine being rated at 28·4 h.p. The sportsman's coupé displayed at Olympia is an attractive car in which the doors are not too wide (£535). The saloon is £485.

One-shot lubrication is fitted on the six-cylinder 20/60 h.p. Vauxhalls. These are dignified-looking cars with a fine road performance. The prices range from £495, the fabric saloon shown in Fig. 4 being £565.

On the Wolseley the radiator shutters (hand controlled) are chromium plated. The very smart black 16 h.p. six-cylinder Wolseley is good value at £450. The 21/60 h.p. eight-cylinder saloon is £515. Standard are exhibiting a new car, styled the "Envoy." This version of the 15 h.p. Standard is more roomy and has a slightly larger engine. The saloon is £340, with sliding roof.

Most of the old-established makers are avoiding extravagant body designs and garish colours. A typical example of the dignified motor-car, such as the doctor requires, is the 14/45 h.p. Talbot. The prices

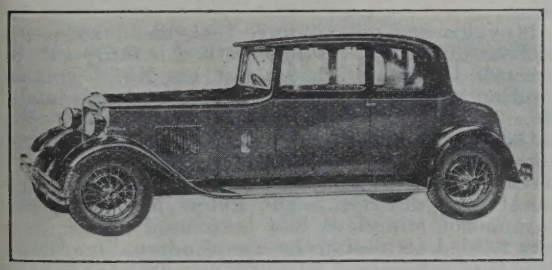
FIG. 5.



Hillman "Straight Eight" Saloon.

range from £395; an attractive sliding roof coupé is £425. The Sunbeam stand provides another lesson in up-to-date but restrained coachwork. The same applies to the eight-cylinder Hillman (Fig. 5), which also includes Silentblocs and automatic radiator shutters in its specification. This is the least expensive British "eight." As compared with a six-cylinder car, an "eight" gives even smoother running, but the difference is not so marked as between a six- and a four-cylinder engine. The saloon is £445 and there is a drop-head coupé at £510. The four-cylinder Hillman cars have no radiator shutters. Automatic shutters are provided on the new Humber "Snipe" six-cylinder model, and on the new six-cylinder Morris Oxford, the fabric saloon of which is £285. A coupé (not shown at Olympia) is £295. On the adjoining stand at Olympia is the Essex. With an

FIG. 6.



The new Singer Six 2/3 Seater.

18·2 h.p. six-cylinder engine this car is fine value for money. Radiator shutters (hand controlled) are fitted. Chassis lubrication (as with the Morris) is by grease gun. Saloon prices range from £250. The convertible coupé (£295) has a big rear compartment which locks.

The Chryslers also have plenty of locker room and are improved in performance and more dignified in appearance. The "66" saloon is £395, and the open two-seater "70" model is £450. On these cars the radiator shutters are imitation, but on the "77" automatic shutters are provided. The "77" (this figure refers to maximum speed) is £625 for the saloon.

The "Babies."

Some doctors favour a "baby" car for short journeys as a second car. The 7 h.p. Austin and the 8 h.p. Morris Minor have established a fine reputation, and now have safety glass and chromium plating. A handsome new coachbuilt saloon Minor with opening head is displayed at £149, and there is an addition to the 8 h.p. M.G. Midget range: a sportsman's coupé with four glass panels set in the sliding roof. This car is well finished at £245, but it is surprising to find the battery box lid uncovered on the floor. The finest show of "baby" car coachwork is on the 7 h.p. Triumph stand, the new saloon landaulet (£197 10*s.*) being very smart in a black finish, with a folding head, and a trunk at the rear which locks.

Conclusion.

There are some most interesting new cars at Olympia, which are fully described in the current number of the *Autocar*, but the doctor who wants a car for immediate daily and reliable service will be wise to buy a type which has been well tried out. In some cases, doubtless, the designs have been so perfected that they will give little or no trouble, but it frequently happens that, no matter how many thousands of miles a new car has been tested by the makers, some fault is discovered during the first year when thousands of people drive it for thousands of miles.

The equipment of practically every closed car now includes door locks. In some towns, however, the police require car doors to be left unlocked when the car is parked, and in such circumstances the doctor motorist will need a dickey, or some other locking compartment. For this reason the two-seater or coupé type of body has a special appeal to the doctor. The sportsman's coupé type is very popular, but on some of them the doors are too wide for convenient access in a busy street or in the garage.

Chromium plating for the bright parts is now standardised by almost all manufacturers. This also means less trouble in keeping a car in good condition, since chromium plating is non-tarnishable and requires only an occasional rub with a rag.

The doctor who has, or buys, a car not equipped with radiator shutters can, of course, obtain these as an extra fitment. A number of the accessory makers whose exhibits are displayed in the galleries at Olympia are showing shutters and muffs, and in this part of the exhibition there are to be seen a great number of other accessories, some, such as fog lights, of special interest to those motorists whose business or profession takes them out in all weathers.

THE MEDICAL INSURANCE AGENCY.—On Tuesday, Oct. 15th, the annual general meeting of the agency was held at the house of the British Medical Association, and the report covering the twenty-second year of its work was received. This showed that great expansion had occurred. The approved balance-sheet showed that the life assurance now dealt with through the agency approximates very closely to a total of one and three-quarter million pounds, and increases were shown in the sections of sickness and accident, motor-car insurance, and comprehensive household policies. The total premiums for insurance business debited to the agency by the various companies with which its business is transacted amounted to £89,948. The rebates to the doctors insuring through the medium of the agency amounted to £4187.

The following grants were made to medical charities for the year 1929:—

	£	*s.*	*d.*
Royal Medical Benevolent Fund	630	0	0
Royal Medical Benevolent Fund Guild ..	630	0	0
Epsom College: Dawson Williams Presentation Scholarship Votes	860	0	0
Girls' Education Subcommittee	250	0	0
Royal Home for Incurables, Putney	52	10	0
Sir Charles Hastings Fund	52	10	0
Total	£2,475	0	0

As a result of this distribution the total sum devoted to medical charities by the Medical Insurance Agency since 1910 amounts to nearly £23,000.

Sir Robert Bolam, Lady Barrett, Dr. J. D'Ewart, Lieut.-Colonel R. H. Elliot, and Dr. J. W. Bone were re-elected as directors.

Correspondence.

"Audi alteram partem."

ELECTROCARDIOGRAPH LEADS.

To the Editor of THE LANCET.

SIR,—A false idea about the significance of electrocardiograph leads is widely diffused among students, possibly also among their teachers, and is periodically given further leases of life in successive editions of at least one reputable text-book of medicine.

The heresy is that lead I. chiefly indicates the activity of the auricles, lead II. that of the right auricle and ventricle, and lead III. that of the left auricle and ventricle. That this is untrue can be readily proved, with regard to the auricles, in lead I. by taking any unselected series of tracings, when it will be manifest that it is lead II. which best shows up the P or auricular waves. The inaccuracy of the statement with regard to the other two leads is similarly evident. The truth is that, as Sir Thomas Lewis states (The Mechanism and Graphic Representation of the Heart Beat, third edition, p. 55):—

> "A lead from the right arm to left leg in human electrocardiography is not equivalent to a lead from electrodes placed in experiment on the actual base and apex of the heart. In human work the contacts with the heart are in reality large, they are constituted by the tissue surrounding the heart on all sides. . . . The resultant curves are composite and represent, more in their due proportions, the activity of the heart muscle as a whole."

I trust that this protest may induce editors, and those responsible for the subject in text-books, to search their pages and their consciences with a view to repentance.—I am, Sir, yours faithfully,

London, W., Oct. 22nd, 1929. GEOFFREY BOURNE.

THE DIAGNOSIS OF LARYNGEAL CANCER.

To the Editor of THE LANCET.

SIR,—At a recent meeting of the Section of Laryngology of the Royal Society of Medicine Dr. Jobson Horne read a most instructive and inspiring paper describing cases, culled from the Proceedings, in illustration of difficulties in the diagnosis of cancer of the vocal cords with resulting fallacies in statistics. A common error was the mistaking of tuberculosis for cancer, and if the diagnosis had to be made on laryngoscopical appearances alone it was often excusable. I urged the practice of submitting a fragment removed to microscopical examination before deciding to perform laryngo-fissure or a fortiori laryngectomy—life-saving resorts in cancer and life-endangering in tubercle.

In illustration I exhibited a few lantern slides of such sections from cases in which the previous diagnosis had been incorrect, or in which immediate confirmation of a disputed diagnosis was essential. In one, for instance, the case was supposed to be one of tuberculosis, but the microscope revealed unmistakable epithelioma. This was found on laryngo-fissure to be so extensive that laryngectomy had to be at once performed, and the patient after five years is now well and hearty. In another, a gentleman of mature years, and of a rather obstinate disposition, refused to accept the diagnosis of cancer until the microscope enabled us to insist on its correctness, when early removal by pharyngotomy resulted in complete and lasting cure. It is not too much to claim that several of these patients would soon have reached the incurable stage, and have lost their lives, if appropriate treatment had not been promptly carried out with the thoroughness that only an exact diagnosis could inspire and justify. The competence of the pathologists, on whose reports the diagnosis in each case was finally established, is beyond question. My friend, Mr. Layton, somehow considered that these slides "afforded a strong argument against biopsies" (see Proceedings of the Section, p. 72). I am sure that my respect for his technical opinion is shared by many of your readers, but I hope they will not allow themselves to be deterred from resorting to this invaluable method for the clinching of the diagnosis, and avoiding the difficulties described by Dr. Jobson Horne.

I am, Sir, yours faithfully,

London, Oct. 21st, 1929. JAMES DUNDAS-GRANT.

SPINOCAIN: THE CONTROLLABLE ANÆSTHETIC.

To the Editor of THE LANCET.

SIR,—You published last week an abstract of the papers read by Dr. G. P. Pitkin and Dr. F. A. Kelly to the Section of Anæsthetics at the recent annual meeting of the British Medical Association, describing their new solution "spinocain" and the technique which they employ. These papers seem to have met so far with very little comment. Those, however, who are interested in the subject of spinal anæsthesia cannot but be struck by the surprising amount of stress they lay on the question of the fall of blood pressure, due to the ordinary methods of spinal anæsthesia, which is a point they advance as one of the chief arguments in favour of this new solution. Dr. Pitkin's quotation from a "well-known American author," that "the radial pulse cannot be felt by the fingers, nor can it be detected by the ear when the arm is subjected to the pressure of the cuff of the sphygmomanometer" is hardly the experience of English observers, so that possibly his insistence on the technique which he has elaborated is as much responsible for the improved results obtained in America as his new solution.

During a term as temporary assistant R.M.O. at St. Luke's Hospital, Chelsea, last year, I took blood-pressure readings at five-minute intervals in a series of 25 cases considered suitable for this type of anæsthesia, stovaine being used; only in four of these cases was there any appreciable fall in blood pressure. In two of these latter cases the fall was directly attributable to surgical interference—i.e., clamping the meso-appendix in one case and pulling on an adhesion of the omentum to an old hernial sac in the other.

Stovaine and mocain have their disadvantages and without doubt Dr. Pitkin's method is fairly safe and superior to many others; but his No. 1 spinocain solution contains 1 per cent. of strychnine and his No. 2 solution 3 per cent. of ephedrine. Many authorities maintain that the use of ephedrine temporarily inhibits the action of adrenalin. If a patient should suffer vaso-motor collapse during a spinal anæsthetic, disaster might follow if a preoperative vaso-motor stimulant had been used, which in any way tended to inhibit the use of adrenalin—the only drug that can be used intravenously with the assurance that a rise in blood pressure will almost immediately follow. Moreover, the method at present most widely used in this country that does not require a measured degree of Trendelenburg position and permits of the drug being injected low down in the dural sac has at least the merit of simplicity, and appears to be equally safe.

In any case, far more than in other methods of anæsthesia, success depends much more upon the anæsthetist than upon the particular solution used, and failures are generally due to faults of technique. Correctly administered, within the limits of the indication for its application, spinal anæsthesia is the most satisfactory of anæsthetics, and it is to be hoped that the place given to the discussion on this subject this year will stimulate in this country the greater interest which it deserves.

I am, Sir, yours faithfully,

Norwich, Oct. 17th, 1929. L. SHILLITO.

CURES AND PREVENTION.

To the Editor of THE LANCET.

SIR,—In his letter appearing in your issue of Oct. 12th (p. 793) Dr. W. M. Crofton states that "there is only one efficient intravital *germicide* in the Pharmacopœia, and that is antidiphtheritic serum" (italics mine). It would be illuminating to workers in serology if Dr. Crofton would communicate the evidence on which he bases his theory of the germicidal action of a serum usually regarded as more or less purely antitoxic in therapeutic action. The tissues themselves appear to be an efficient germicide for the diphtheria bacillus, if its toxic products are adequately neutralised.

I am, Sir, yours faithfully,

E. W. AINLEY WALKER.

University College, Oxford, Oct. 16th, 1929.

SUBCUTANEOUS NODULES IN THE SCALP.

To the Editor of THE LANCET.

SIR,—In their paper under the above heading in your issue of Oct. 19th (p. 812) Dr. F. J. Poynton and Dr. Alan Moncrieff refer to the case of a child, which they regard as analogous to their own cases, and which was demonstrated by Dr. Hugh Thursfield, at the Royal Society of Medicine (Section of Disease in Children) on May 22nd, 1925. They say that a subsequent speaker suggested the term "leukæmic lymphadenosis." I was the speaker in question, but I suggested *aleukæmic* (not leukæmic) lymphadenosis. In the printed account the *a* comes at the end of a line, and the hyphen has been omitted, but the context makes the meaning clear. I venture to suggest that both the cases now described by Drs. Poynton and Moncrieff belong to the class of lymphatic leukæmia, of which hypoleukæmic and aleukæmic (including actually leucopenic) lymphadenoses are mere varieties, or sometimes only temporary phases. The blood-counts in the second case are inconsistent with a diagnosis of lymphadenoma (in the sense of lymphogranulomatosis maligna). The frequency of infections in subacute leukæmic cases of all kinds has been long established, and the occasional occurrence of subcutaneous or cutaneous nodules has been recognised, but much less is known of associated bone-changes—see, however, cases recorded by Haenisch and Guerner (*Zeit. f. Klin. Med.*, 1919, lxxxviii., 28), and H. K. Taylor (*Radiology*, 1926, vi., 523), which may have some bearing on the subject.

I am, Sir, yours faithfully,

London, W., Oct. 19th, 1929. F. PARKES WEBER.

*** In describing Dr. Thursfield's case, Dr. Poynton and Dr. Moncrieff refer to "curious nodular swellings in the scalp." We regret that in our last issue the word "curious" was printed as "carious."—ED. L.

MALIGNANT TUMOURS IN THE FOWL.

To the Editor of THE LANCET.

SIR,—The contention upheld by Prof. A. Leitch that it is possible to induce malignancy in fowls by the injection of normal tissues of the fowl or of material obtained from them is of such importance, not only from the pathological but also the biological point of view, that we may be excused for reverting once more to the subject.

In our paper on the Alleged Experimental Production of Tumours in Fowls, published in THE LANCET of Oct. 5th, we emphasised the significance of the similarity of the tumours obtained by Prof. Leitch and Dr. Murphy with the Rous sarcoma No. 1. We pointed out that this similarity is an argument against their contention that they had induced malignancy by the normal tissues which they had injected, and supports our view that their results were due to an accidental contamination with the "agent" of the Rous sarcoma, which can sometimes exhibit an extraordinary virulence. To this Prof. Leitch replies in your issue of Oct. 12th that his tumour was "at first histologically distinguishable from the ordinary Rous sarcoma," and that "one at least of Dr. Murphy's tumours produced by testicular extract was quite distinct."

Our argument was based on the information supplied by Prof. Leitch and Dr. Murphy in their respective papers, published in the official report of the International Conference on Cancer, London, 1928. For the information of your readers we append the relevant quotation from these two papers. Dr. Leitch writes:—

"A year ago in a series of experiments in which normal fowl pancreas was injected into the pectoral muscles, we succeeded in obtaining a tumour of the Rous type, a tumour transmissible by filtrates and desiccates. This tumour had a more solid structure than chicken tumour I. as we know it now. Histologically, it differed in that it had areas of fairly compact spindle cells, and it contained much more mucoid material, rendering filtration difficult. In subsequent generations it has approximated more and more to the classic type until now it is quite indistinguishable from it."

Dr Murphy writes:—

"We have isolated from such normal tissues as the testicles of normal fowls, not in contact with any tumour-bearing animals, a similar agent with which we have produced the typical tumour, transplantable in over 90 per cent. of fowls."

Neither of the two authors published any figures.

We are, Sir, yours faithfuly, A. M. BEGG.
W. CRAMER.

Imperial Cancer Research Fund, Queen-square, W.C.,
Oct. 16th 1929.

A POINT IN CERTIFICATION.

To the Editor of THE LANCET.

SIR,—In your issue of Oct. 19th under the heading of Medicine and the Law you deal with the case brought against a colleague and myself for failure to keep a proper register under the Dangerous Drugs Acts. It has been pointed out to me that to the casual observer it would appear that I might have signed a blank piece of paper, and allowed my patient to fill in whatever he or she thought fit. As this same wording has appeared elsewhere, particularly in the lay press, I should like to trespass on your space to state categorically that such was never the case. Every order, &c., signed by me whereof the body was written by someone else has been written under my personal supervision and checked over by me before signature. Although this matter is quite irrelevant to a charge of failing to keep a register, nevertheless since the matter has been raised it is only justice that this fact should be made plain, as also the fact that the magistrate specifically said: "One thing was clear; there was no suggestion against either of these medical men that the regulations were infringed for the purpose of any malpractice in administering the drugs."

I am, Sir, yours faithfully,

REGINALD KARN, *M.C.*, M.R.C.S., L.R.C.P.

Beaumont-street, Portland-place, W.,
Oct. 23rd, 1929.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. J. M. Sloan, late R.A.M.C., retires on retd. pay.

Col. H. E. M. Douglas, V.C., late R.A.M.C., to be Maj.-Gen.

Lt.-Col. W. L. Steele, from R.A.M.C., to be Col.

Maj.-Gen. W. R. Blackwell, late R.A.M.C., to be Dep. Dir.-Gen., Army Med. Servs., War Office.

Maj. W. J. Weston to be Lt.-Col.

ARMY DENTAL CORPS.

G. A. Ballantyne, D.F.C., late Capt., the A.D. Corps, to be Capt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. J. G. Churton and Capt. D. J. F. O'Donoghue, having attained the age limit of liability to recall, cease to belong to the Reserve of Officers.

The King has approved of Lt.-Col. E. C. Hodgson, D.S.O., I.M.S., and Lt.-Col. R. B. Ainsworth, D.S.O., O.B.E., R.A.M.C., being appointed Hon. Physicians to the King, and to being promoted to the brevet rank of Colonel.

JORDANBURN PSYCHOLOGICAL INSTITUTE.

(FROM OUR EDINBURGH CORRESPONDENT.)

OPENING OF THE NEW LECTURE THEATRE.

ON Oct. 14th Mr. William Adamson, Secretary of State for Scotland, opened the new lecture theatre of the Jordanburn Nerve Hospital and Psychological Institute at Morningside. This is claimed to be the most complete theatre for medical purposes to be found anywhere. In other respects, too, the occasion was exceptional. It brought together the University, which was represented by the new Principal, Sir Thomas Holland, who here made his first public speech in Edinburgh, the City and the Royal College of Physicians. The three Maces emphasised the official nature of the meeting. Mr. Adamson noted the rapid rise of the nerve hospital and its continuous development as a vital centre for teaching and research. It was, he said, the beginning of a movement to make hospital provision for conserving the mental health of the Scottish people and raising it to a higher level. The old fears which had enslaved the public mind in facing the problems of mental disorder must be robbed of their power; the theatre in which they were met was designed as a deliberate challenge to the exclusiveness of former methods of dealing with disorder of the nervous system. The work of the institution would reach deep down into the life of the nation; the individual sufferers, the difficult and backward children, handicapped for life in many cases, and those who were mentally and morally weak and doomed to become derelict would be helped. There was hardly one branch of the social service in which the coöperation of the medical profession could be safely dispensed with. He understood that some £20,000 was still required to provide the laboratories that were the vital centre from which the whole of the research activities must radiate.

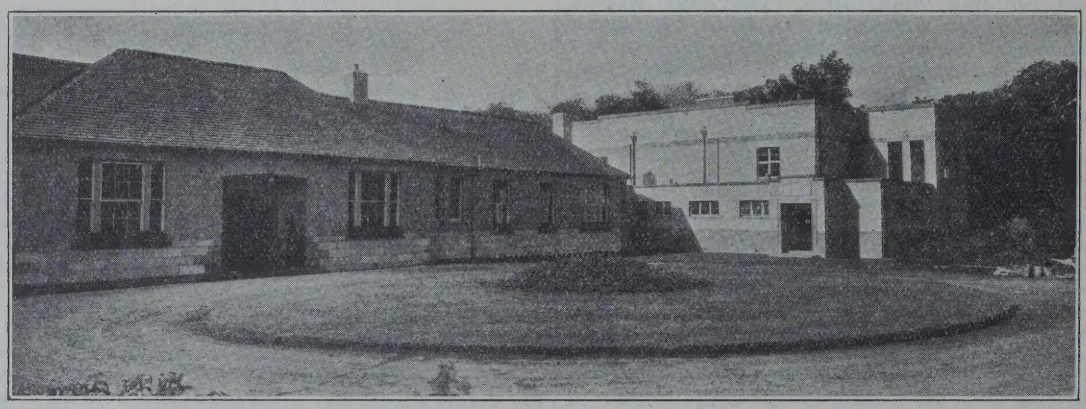
Sir Thomas Holland expressed his pleasure that his first public ceremony in Edinburgh should be the dedication of a lecture theatre to a work which would supplement the activities of the University. It was very significant that they had got over the old difficulty of regarding physical disabilities as due to providential intervention. Those who had followed the history of the medical profession would realise what a revolution had occurred since Pasteur discovered that diseases were due to a germ and infection; yet they still went on imagining that mental aberrations were something beyond the reach of research. The Institute would increase the facilities for lectures to students, but it would go much further in undertaking research into the causes of mental disturbances. Here was another opportunity for Edinburgh, largely due to the irresistible enthusiasm of Prof. G. M. Robertson, to lead the medical schools of the world in opening up new ground.

Prof. Lorrain Smith, Dean of the Faculty of Medicine, said that since the days of Laycock the study of mental disorders had been prominent in Edinburgh. He doubted if ever before in this country there had been opened on the same day a hospital which was also an institute for research. Every hospital was moving in that direction, but Jordanburn had done it first. They were introducing there an application of psychology which had never been reached in this country before. This was the day of psychology; so extensive indeed was its application that they could live from a happy childhood to a green old age in the light of pure reason.

Dr. R. A. Fleming, President of the Royal College of Physicians, who agreed that the hospital was unique in Great Britain, suggested to Mr. Adamson that they had in Borstal institutions problems which would be greatly helped by psychological investigation.

Construction of the Theatre.

The lecture theatre has been designed to make it suitable for academic purposes and for semi-popular lectures of an educational character. It is seated for over 250 persons, each of whom will have a perfect view of the platform, which is 34 × 12 feet. Echo has been avoided by covering walls and ceiling with a porous material known as celotex. The backs of the seats have been padded with corduroy, so that if the audience is small there is no echo from wooden benches. The passages are covered with matting. There is thus no hard or smooth surface from which the sound of the voice can recoil, with the exception of the wall at the back of the lecturer, which acts as a sounding board; but its echo follows the voice so quickly that it accentuates the sound of the words without distorting them. The theatre has a cinema, an epidiascope, and a separate complete out-patient department to which admission is obtained from the outer hall. The stage is in a line with the broad corridor of the hospital so that patients in bed can easily be brought along; there is a large anteroom from which admission to the platform is gained, and patients may be held there in reserve.



Jordanburn Psychological Institute. On the right is the new Lecture Theatre, on the left the out-patient department of the Nerve Hospital.

Staff and Curriculum of the Hospital.

A feature of the hospital is a department for psychology under the directorship of Mr. J. Drever, D.Phil., reader in psychology at the University, and his two assistants, Miss Mary Collins, Ph.D., and Dr. W. R. D. Fairbairn. Pure psychology is now a compulsory subject for the student in the medical curriculum of Edinburgh University, and is taught on alternate days with the subjects of psychiatry and psychopathology during the whole of the spring term.

A few days before the opening an anonymous donor gave a sum of £10,000 as an endowment fund for the working expenses of the lecture theatre and the out-patient department.

LONDON HOSPITAL POST-GRADUATE COURSE.

THIS year for the first time a post-graduate course was held at the London Hospital in connexion with the reunion of the annual dinner. A considerable number of old students attended lectures and demonstrations from Wednesday to Saturday of last week, and the experiment was adjudged a great success, to be repeated, if possible, on a larger scale a year hence. On p. 867 of our present issue will be found the opening paper of the course by Dr. Russell Brain; in a later issue we hope to publish Dr. S. P. Bedson's observations on vaccination, whilst reports of a few of the other addresses appear below.

In the course of some observations on the

Present Position of General Light Therapy

Sir ROBERT STANTON WOODS referred first of all to the two schools of thought which favoured the use of long light rays (luminous) and short rays (wavelength 2900 to 2500) respectively. The theoretical grounds for treatment by light were, he said, by no means well established. One fact, and one fact only, was clear—namely, that exposure of the skin to ultra-violet rays would prevent and cure rickets. But these rays had other probable—indeed, highly probable—effects. In the first place they were bactericidal. This property, however, was of little use in practice, since as bactericides they could not penetrate one bacterial spore to reach another. What was likely to be more important was that it had been pretty definitely shown that exposure of the skin to ultra-violet rays would increase the bactericidal power of the blood. Probably the process here was local and comparable to protein shock—that is to say, it might produce a non-specific immunity reaction. The difference of opinion between exponents of long ray therapy and short ray therapy was conspicuous in the treatment of tubercle, a disease in which light was almost certainly useful, at any rate in the surgical forms. There was reason to suppose that ultra-violet therapy was beneficial also in certain circumstances in frank septicæmia. It would do no good here if the resistance of the body against infection was exhausted, but it might help a patient in whom there still existed the possibility of antibody stimulation. The use of light in other general conditions, and especially in debility, was on even less certain ground; no incontrovertible evidence had been brought forward to show that exposure of the so-called debilitated person to ultra-violet rays had any tonic effect. His own experience had been confined to its employment for definite diseases, and especially inflammatory conditions of joints. He had no doubt that radiation did have some profound good effect in certain forms of subacute and chronic arthritis. In one case, indeed, complete cure had followed such treatment applied after other measures had failed over a period of two years, and though complete success of this kind was exceptional, he had noticed that the general health usually improved under light treatment, and that in the majority the pain and stiffness were greatly alleviated, although he had not yet been able to show that (with the exception mentioned) the pathological joint changes were affected. As for the other effects attributed to ultra-violet rays, there was very little evidence of their utility in medicine. Nor had any means yet been devised for measuring dosage scientifically. Of the two principal methods in use one depended on the measurement of erythema after exposure to the rays, whilst the other was frankly empirical. In treatment some authorities, such as Rollier, began by exposing a small area of skin to light and increased this area gradually; others preferred short exposures of the whole body from the first. The dosage technique depended mainly on the nature of the source employed. It would be seen, said the speaker in conclusion, that the experimental evidence in favour of light treatment was meagre, and that conclusive clinical evidence, which would be much more useful, had yet to be collected.

Mr. ALAN PERRY gave a lecture demonstration on the

Injection Treatment of Varicose Veins.

Three solutions had, he said, been tried at the London Hospital—namely, 20 per cent. sodium chloride (which had not proved very satisfactory), 30 and 40 per cent. sodium salicylate, and quinine and urethane (1·0 g. quinine plus 2·0 g. urethane in 15 c.cm. sterile water). Special syringes had been used, but any 5 c.cm. syringe would do perfectly well. The ordinary hypodermic needle was too sharply pointed for this work, but could be ground down to a small bevel. Injections might be given with the patient standing up, sitting, or lying down. Preliminary bandaging of the leg was unnecessary. It had been shown that the flow of blood in varicose veins was downwards, and even if the solution injected was not actually carried distally, its flow towards the heart was at any rate very slow. The solution acted by causing swelling and disappearance of the endothelium of the vein. The blood did not simply coagulate, as in thrombophlebitis. A special name had been coined for the inflammatory condition produced—namely, venitis. The consequences of injection were: (1) thickening of the walls of the veins; (2) obliterative sclerosis; (3) obliterative sclerosis and perivenitis. When salicylates were used intense cramp might be felt in the leg after injection, lasting perhaps 30 seconds; with quinine and urethane, on the other hand, the treatment was painless at the time. In either case injection was followed in two or three days by thickening along the vein, perhaps with discoloration, and rarely more acute inflammation developed. As a rule, patients noticed improvement after the first injection. Embolism had never occurred in the London Hospital cases, and there was no record in the literature of embolism after injection of salicylates. Sloughing of the skin was an occasional complication but became more infrequent as the operator became more skilled. It was probably due to leakage of solution outside the vein, and although troublesome was not dangerous. The slough took a long time to separate and healing was slow. Fomentations should be used to remove the slough; then a bland ointment could be applied. Patients occasionally fainted, and with quinine they sometimes complained of buzzing in the ears and a taste of quinine in the mouth. In every case a full medical examination should precede treatment, and albuminuria or glycosuria should deter the surgeon from undertaking it. It should be remembered that all pains in the foot and leg were not necessarily due to varicose veins. The treatment was suitable for any tortuous varicose vein up to the saphenous opening, provided that the general medical condition was sound and that there was no generalised œdema of the leg with lymphatic obstruction. Pregnancy was a further contra-indication. Injection should not be attempted for minute superficial varices or when the condition was secondary to deep thrombosis, as in phlegmasia alba dolens. Recent thrombophlebitis also contra-indicated injection treatment.

Modern Treatment of Lead Poisoning.

Dr. DONALD HUNTER said he knew his audience would agree that so far as industrial plumbism was concerned the treatment was first and foremost preventive. Those who were certifying surgeons under the Factory Acts would appreciate, too, that the Home Office regulations as applied in this country controlled the situation better than any other scheme elsewhere in force. But new sources of poisoning were constantly arising, the most productive at present being the manufacture of electric accumulators. Clinical observation and the evidence of experimental pathology provided abundant evidence that inhalation of dusts and fumes was far more dangerous than ingestion. Extensive chemical

analyses after prolonged exposure had shown that lead was stored in the skeleton, probably in the form of tertiary phosphate. Of the total amount in the body 90 per cent. might be immobilised in the bones and while it stayed there it was harmless. A study of the factors causing its elimination and storage had been made the basis of modern therapy. The metabolism of calcium and of lead were very similar so that a low calcium diet favoured the excretion of calcium and of lead, whereas a high calcium diet and calcium therapy favoured their retention in the bones. Therapeutic measures which greatly disturbed the acid-base balance of the blood promoted elimination of lead, probably by mobilising it as secondary phosphate, which was a hundred times more soluble than the tertiary salt. Among agents used for this purpose were phosphoric and hydrochloric acids and their ammonium salts, and sodium bicarbonate; the mode of action of potassium iodide was unknown. The practical conclusions to be drawn from these observations were:—

1. The patient poisoned in industry has shown himself to be susceptible. He must never work in lead again.

2. In the treatment of toxic episodes (colic, palsy, encephalopathy) the patient should have a high calcium diet (milk, eggs, butter, custards, ice-cream, green vegetables, nuts, raisins) plus calcium lactate 3·0 g. daily. Constipation should be combated by enemata and by magnesium sulphate. Colic might be treated with local heat, amyl nitrite, nitroglycerine, and atropine. In bad cases 20·0 c.cm. of a 5 per cent. solution of calcium chloride should be injected *very slowly* into a vein. In palsy (while developing) the general treatment should be as above, together with splints and massage. In encephalopathy, besides treating convulsions and mania symptomatically, calcium therapy was required and intravenous calcium chloride might be necessary.

3. *Elimination* should be attempted only in the absence of toxic episodes. A constant watch must be kept for their occurrence, and if they did occur it was necessary to revert to a high calcium diet and calcium therapy. In all cases a high calcium diet must be resumed after three weeks' treatment. For a low calcium diet the patient might have meat, liver, potato, rice, tomato, banana, apple, butter fat, bread without milk, tea and coffee without milk, sugar, salt, pepper. Dilute phosphoric acid, 20·0 c.cm. (in half a pint of water flavoured with sugar and gin), should be taken through a straw hourly for eight doses a day if tolerated; also ammonium chloride, 1·0 g., in half a pint of water, hourly (eight times daily), if tolerated. The symptoms of acid intolerance were loss of appetite, headache, and nausea; but most patients never developed these. Elimination might be continued for three weeks. It was very much more effective than treatment by potassium iodide. When the patient had nephritis elimination was assisted by sodium bicarbonate, 40·0 g. a day; acids must never be used.

Causes of Sudden Death.

Dr. W. W. WOODS spoke of sudden death in the light of his experience as assistant director of the Institute of Pathology. He subdivided the causes according to the organ affected:—

1. *Heart.*—(*a*) Coronary atheroma and thrombosis. This constitutes the largest of all groups. There is infarction of the myocardium, the anterior descending coronary artery being that most commonly affected. (*b*) Coronary atheroma with stenosis of coronary trunk but no thrombosis. (*c*) Syphilitic aortitis with stenosis of the coronary orifices, the coronary trunks being normal. (*d*) Hæmopericardium either from rupture of the infarcted heart or from rupture of aneurysm of the ascending aorta into the pericardium. (*e*) Aortic incompetence, due to old rheumatic involvement or due to syphilitic aortitis. (*f*) Atheromatous stenosis of the aortic valve.

2. *Cardiovascular.*—(*a*) Cardiovascular hypertrophy either primary or secondary to chronic interstitial nephritis. (*b*) Rupture of aortic aneurysm into œsophagus. (*c*) Spontaneous rupture of the aorta usually presenting a ragged tear about an inch long. (*d*) Perforation of aorta by sharp foreign body impacted in œsophagus.

3. *Lung and Air Passages.*—(*a*) Chronic pulmonary tuberculosis with hæmoptysis and suffocation. (*b*) Foreign body in air passages (pharynx, larynx, trachea, bronchi). (*c*) Pulmonary embolism, large enough to be fatal, occurs only in people just out of bed after an illness. Death occupies several minutes.

4. *Brain.*—(*a*) In cerebral hæmorrhage sudden death only occurs in a very extensive lesion. The patient usually survives several hours. (*b*) Rupture of congenital aneurysm of the circle of Willis. (*c*) Hæmorrhage into a soft glioma. (*d*) Cerebral embolism rarely causes sudden death.

5. *Stomach.*—Perforated gastric ulcer is an occasional cause.

6. *In Infants*, the post-mortem diagnosis presents great difficulty. The condition may be due to: (*a*) Inhalation of vomit—usually white curdy stomach content. (*b*) Overlaying—the exact circumstances leading to the fatality are very important. The lips and nails are blue and petechial hæmorrhages are found in pleura, pericardium, thymus, and testis. (*c*) Convulsions. (*d*) Hæmorrhage into the suprarenals—rare. (*e*) Bilateral thrombosis of renal veins causing hæmorrhagic infarction of the kidneys.

Mr. ROBERT MILNE delivered a lecture on

Pain in the Fore Part of the Foot.

In the causation of such pain he distinguished six main factors: (1) Tight socks and shoes. (2) Tinea or cheiropompholyx affecting the toes. (3) General diseases, such as tuberculosis, syphilis, and gout, affecting the bones and joints of the foot. In these three groups the treatment must obviously be directed to the underlying cause. (4) In a fourth group he placed cases of hallux rigidus and hallux valgus with or without bunion, flat-foot, and hammer-toe. The relative importance of the various factors in the production of the pain must be carefully weighed. In treatment attention to shoes and socks must come first, and might be all that was necessary. If operative measures were deemed advisable they should be as conservative as possible. (5) In another group he placed those cases with a tendency to claw-foot, with or without shortening of the tendo Achillis. Such a tendency would invariably throw too much weight on the fore part of the foot, with consequent pain, chiefly in the region of the head of the first metatarsal. If on examination it was found that the metatarso-phalangeal joint of the great toe could still be straightened, transplantation of the tendon of extensor hallucis longus was justifiable. If the condition was more advanced tenotomy of the tendo Achillis would also be necessary. In many cases nothing further was required than the fitting of a transverse bar of leather to the sole of the boot at a level just posterior to the heads of the metatarsals. (6) Incompetence of the first metatarsal owing to its being either too short or atavistic—i.e., possessing abnormal mobility at its tarsal joint—threw excessive strain on the second metatarsal, and might produce considerable pain in the fore part of the foot. Evidence of this condition might be found in actual osseous hypertrophy of the second metatarsal, callosity of the skin beneath its head, a point of tenderness at its base, and relative thinness of the skin beneath the head of the first metatarsal. In young people actual infraction of the head of the second metatarsal might be demonstrable by X rays. Also apparently spontaneous fractures of the shafts of the second or third metatarsals were not uncommonly found, especially in young adults subjected to excessive or sudden strain on the feet—e.g., route marching. Without radiographic examination such fractures were easily missed. The metatarsal bar was again a great help in treating this group, but in cases where fracture was present rest for the foot for three to four weeks

was essential if chronic pain was to be avoided. (7) Mr. Milne mentioned Köhler's disease (a condition allied to Schlatter's and Osgood's diseases) as another cause of pain in fore part of the foot requiring rest. (8) He pointed out that fracture of the fifth metatarsal occurred almost invariably at its base and must be distinguished in X rays from a small accessory bone (bone of Vesalius) which was occasionally present in this region.

Dyspepsias of Childhood.

Dr. ROBERT HUTCHISON began an address on this subject by comparing the dyspepsias of childhood and adult life, referring especially to the relative rarity of organic forms, and the greater importance of the intestine, in childhood. In the child dyspepsia might simulate other things; in the adult other things might simulate dyspepsia. The dyspepsias of childhood could be classified as gastric (acute and chronic), hepatic, and intestinal. In acute *gastritis* the child not infrequently had symptoms of considerable severity—high temperature, repeated vomiting, convulsions, and even coma. These must be distinguished from the symptoms of "acute abdomen" and acute infective diseases, including meningitis. The treatment could be summarised as bed, starvation, and sodium bicarbonate. Chronic gastric dyspepsia of the catarrhal form might follow acute gastritis, or might be due to some source of chronic irritation such as the too free use of roughage in the diet. Chill (from inadequate clothing, &c.) was also an ætiological factor. The child had a diminished appetite, nausea (rarely vomiting), and occasionally attacks of pain in the mornings; it was often constipated and had a coated tongue. Treatment consisted in removing the irritating forms of food from the diet; in seeing that the child had ample time for its meals and masticated efficiently, and in ensuring that the clothing was warm. Rhubarb and soda were the most useful drugs. The functional form of chronic gastric dyspepsia was uncommon in childhood. An atonic variety might be encountered at puberty. *Hepatic dyspepsia* was often seen in children under school age. They were "unsatisfactory" children with capricious appetites, bad tempers, and bad breath; they were pallid and slept badly. Their stools were usually pale and often constipated. They suffered from bouts of vomiting and acidosis, fever, and migraine which might be called "the hepatic episodes." The factors in the production of this form of dyspepsia were an inborn hepatic inadequacy (often hereditary) and over-use of the liver foods such as milk, cream, eggs, chocolate, and oranges. The quantity of these in the diet should be cut down (especially milk). The most useful drugs were rhubarb and mercury, and paraffin was best avoided. *Intestinal dyspepsia*—the so-called mucous disease—was found usually in children of school age (6–12 years). These also were "unsatisfactory" children; they were languid, and dark under the eyes; they had disturbed nights with terrors or sleep-walking; they had attacks of pallor or fainting, and of night sweating. They had poor appetites with occasional voracious hunger, they passed jelly in the stools, and they were not often constipated. They also suffered from "episodes," which include bouts of lienteric diarrhœa, umbilical colic (in which the pain might be severe, but was always short-lived, and might recur several times a day). They were subject to fainting and worms. These cases must be distinguished from chronic appendicitis and abdominal tuberculosis. The important factor in their production was the over-use of carbohydrate in the diet, which induced an excessive secretion of mucus in both stomach and intestine. The supply of carbohydrate should therefore be cut down. Useful drugs were alkalis, rhubarb, nux vomica, bitters, and such laxatives as aloes and senna. Paraffin again was best avoided; iron was unnecessary and cod-liver oil and malt should not be employed at the outset of treatment. For diarrhœa and colic a few drops of tincture of opium (with or without belladonna) could be given before meals and a laxative at night. In the treatment of worms in these cases it was essential to recognise the underlying dietetic error. In all these forms of dyspepsia general regulation of life and change of surroundings (people and place) were of great importance.

Mr. A. J. WALTON gave a short lecture on the *Place of Surgery in Lesions of the Upper Abdomen.*

Dealing first with lesions of the stomach and duodenum, he distinguished four pathological groups: (1) The first was congestion of the mucosa, sometimes with small superficial erosions. This condition was seen, for example, in connexion with purpura, with heart failure and back pressure, and with burns or general sepsis, in all of which conditions the history might be one of acute onset with severe gastric symptoms. These cases obviously did not require surgical treatment. (2) The small multiple erosions of the stomach found in the dyspepsias of young women should also be treated medically; except in cases with severe or repeated hæmatemesis, when a rapid gastro-jejunostomy might be needed to save life. (3) In a separate group he placed gastric and duodenal ulcers of moderate size, giving a short but typically periodic history of dyspepsia, usually with a raised gastric acidity and some radiographic evidence of abnormality. Medical treatment was being widely advocated in such cases, but Mr. Walton said that he himself was not yet convinced of its success and that he still advocated surgical measures. (4) Large chronic penetrating ulcers giving a long history should, in his opinion, always be treated surgically, especially in view of the gravity of the complications—i.e., severe and occasionally fatal hæmorrhage, perforation, stenosis, and carcinoma—all of which might occur despite careful medical treatment. The danger that gastro-jejunal ulcer and lesser curve ulcer might follow gastro-jejunostomy for duodenal ulcer was often mentioned in argument against surgical treatment, but both these sequelæ were usually associated with a failure to reduce gastric acidity and this could almost certainly be avoided by correct and careful technique. It was extremely rare for carcinoma to develop in cases treated by gastro-jejunostomy. Quoting from his own figures, Mr. Walton said that from 80–92 per cent. of cases of gastric and duodenal ulcer treated surgically were free from symptoms five years after operation, and maintained that at present no figures of the results of medical treatment could compare with these. Going on to speak of disease of the gall-bladder, he advocated surgical treatment in certain cases of gall-bladder dyspepsia even when the pressure of stones could not be proved. He showed several gall-bladders removed from such cases in which extensive deposits of lipoid and, in some, small concretions, were present in the walls; which conditions, he contended, were very unlikely to be touched by medical treatment. In undoubted cases of cholelithiasis surgical treatment must be advised, and cases of acute cholecystitis should be operated upon as soon as diagnosed.

FEDERATION OF THE HEALTH RESORTS OF FRANCE.—A medical tour has been arranged by the Société Médicale du Littoral Méditerranéen to take place from Dec. 26th to Jan. 8th. It will include a visit to Marseilles, Toulon, Hyères, St. Raphael, Cannes, Le Cannet, Grasse, Juan-les-Pins, Nice, Menton, Monaco, Monte Carlo, Beaulieu, San Remo, Bordighera. Full particulars can be obtained from Madame Juppé-Blaise, Federation of the Health Resorts of France, 1, Gordon-square, W.C. 1.

ALMONERS UNDER THE LOCAL GOVERNMENT ACT.—A meeting of the Hospital Almoners' Institute has been held at the Leeds General Infirmary at which the position of almoners under the Local Government Act, 1929, was discussed. It was pointed out that the local authorities who take over poor-law hospitals will greatly need the help of trained almoners for follow-up work, since beds can only be emptied reasonably quickly by ensuring that the patients upon leaving go home to suitable conditions.

Medical News.

UNIVERSITY OF OXFORD.—On Oct. 17th the degree of Bachelor of Medicine was conferred on B. R. Caygill.

UNIVERSITY OF CAMBRIDGE.—At a congregation on Oct. 18th the following degrees were conferred :—

M.D.—W. W. McLean, N. F. C. Burgess, and F. B. Parsons.
M.B. & B.Chir.—*A. D. Charters, J. C. Gordon, and Heward Bell.
M.B.—Lancelot Shillito.
B.Chir.—N. L. White.

* By proxy.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The annual Harveian Oration was delivered on Friday afternoon, Oct. 18th, by Sir Wilmot Herringham. After the delivery of the Oration the Baly medal for distinction in the science of physiology was awarded to Dr. E. D. Adrian, and the Bisset-Hawkins medal to Dr. Edward Mellanby, for his work on the physiology of nutrition. In the evening a dinner was given by the President of the College, Sir John Rose Bradford, at which were present, among the guests, Mr. Arthur Greenwood (Minister of Health), Lord Moynihan (President of the Royal College of Surgeons of England), Colonel Samman, R.A.M.C. (Master of the Society of Apothecaries), Mr. Justice Eve, Lord Gorell (chairman of the Society of Authors), Lord Riddell, Sir Reginald Blomfield, R.A., Sir Percy Mackinnon, the Harveian Orator, and the recent medallists of the College.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.—Mr. E. S. Russell, D.Sc., will give six lectures on the Interpretation of Development and Heredity on Mondays at 5.45 P.M. at University College, Gower-street, W.C., from Nov. 4th. Full information may be had from the Director of Studies, 88, Kingsway, London, W.C. 2.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates for the triple qualification have been approved and have been admitted as licentiates :—

H. P. Lawson, E. C. Thomas, H. C. Franz, C. J. Poh, John Kearney, Amin Madwar, F. K. Fenton, D. F. Johnstone, N. J. W. Smith, Duncan Gould, W. O. Molander, J. W. Gregory, Aaokranjan Khastgir, R. C. Annett, W. P. Kennedy, T. S. M. Samahin, H. G. Somerville, K. M. Sambantham, John Elliott, Saravanamuttu Thambish, G. G. Brown, A. O. Jollie, S. A. Kelaney, K. C. K. E. Raje, and A. E. Daviot.

The following have satisfied the examiners in the undermentioned subjects :—

Medicine.—R. F. L. V. Harvey, Florence L. M. Millard, and E. O. Hagedorn.
Surgery.—G. R. Parker, Pieter van der Lith.
Midwifery.—G. R. Parker, George Henderson, P. van der Lith, T. H. Oh, Florence L. M. Millard, and E. O. Hagedorn.
Medical Jurisprudence and Public Health.—M. K. Yong, C. C. Teck, A. I. Baynid, Mary M. Buchanan, Andrew Brock, W. E. MacDougall, S. V. Rajah, W. R. Young, T. W. Millar, H. C. Bodemer, Effie E. Keighley, Gavin Brown, J. W. MacGregor, and M. N. Rozdon.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College on Oct. 16th, with Mr. Alexander Miles, the President, in the chair, the following 33 successful candidates out of 108 entered who passed the requisite examinations between July 4th and 13th were admitted Fellows :—

James William Anderson, Robert Stivala Aspinall, Glen Howard Burnell, John Henry Coolican, Robert Cormack, Newell Raine Cotton, Desmond Edward Cuffey, Ramanlal Thakordas Desni, Thomas Smith Donovan, Eric Alfred Fiddien, Alan Armour Fothergill, John Rex Godsall, Sydney Joseph Pereira Gray, Victor Charles Joseph Harris, Leo Herzenberg, Gangadar Lakshman Khirwadar, Beryl Prideaux Lye, John Thomson McQuat, Douglas George Martin, David Matthew Watson Maxwell, Gavin William Milroy, Bertram George Mitford, James Ernest Monro, George John Murray, Evan William Ronger Hubert Phillips, Gordon Francis Rich, William Buchanan Smellie, Alfred Charles Thomas, Michael Emmanuel Tiruchelvam, Clifford Harold Watson, Francis Lindsay Webster, Lucien Benedict Wevill, and Neville Andrew Jack Young.

At the annual meeting of the College on Oct. 16th the following office-bearers were elected for the ensuing year : President, Dr. James Haig Ferguson ; Vice-President, Mr. Alexander Miles ; secretary and treasurer, Mr. J. W. Struthers ; convener of Museum Committee, Mr. C. W. Cathcart ; librarian, Mr. D. M. Greig. Council : Mr. J. W. Dowden, Mr. Henry Wade, Mr. W. J. Stuart, Mr. A. H. H. Sinclair, Mr. G. L. Chiene, and Mr. J. S. Fraser. Representative on the General Medical Council : Mr. Alexander Miles.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—The annual meeting of the College was held on St. Luke's Day. Dr. W. A. Winter, who has been President since 1927, was re-elected for a third year of office, and he nominated Dr. J. A. Matson, Senior Censor, for a second year as Vice-President. The annual dinner was held on Oct. 21st, when the Fellows entertained a large number of guests. Before the dinner, the President admitted to the Honorary Fellowship of the College Dr. D. J. Coffey, President of University College, Dublin, and President of the Irish Free State Medical Registration Council.

WEST RIDING ASSOCIATION OF EDINBURGH GRADUATES.—The annual dinner of the West Riding Association of Graduates of the University of Edinburgh will be held at the Midland Hotel, Bradford, on Wednesday, Nov. 13th, at 7.15 P.M. The guest of the evening will be Dr. A. Logan Turner. The general meeting of the society will be held before the dinner, at 6.30 P.M. Further information may be had from the hon. secretary at 33, Manor-row, Bradford.

ADDENBROOKE'S HOSPITAL, CAMBRIDGE.—An appeal is being made for £90,000 for the enlargement and improvement of this hospital, which is closely associated with the University. A prominent feature of the scheme is the provision of accommodation for paying patients. So far £23,000 has been subscribed.

EVELINA HOSPITAL FOR CHILDREN.—A convalescent home in Berkshire has been presented to this Southwark hospital on condition that an endowment fund of £20,000 is raised.

JUGOSLAVIAN MEDICAL VISITORS.—A party of over 100 doctors from Jugoslavia assembled last Saturday in the Barnes Hall of the Royal Society of Medicine, where short addresses of welcome were given by Sir William Hale-White and Sir James Berry on behalf of the Fellowship of Medicine and the Jugoslav Society of Great Britain respectively. The Jugoslavian Minister was present, and Dr. Richard Burian, professor of physiology in the University of Belgrade, replied on behalf of the visitors. The medical faculties of Jugoslavia, he said, were young and not quite settled, being founded in a country worn out by the war, and without proper traditions in medical teaching. But they were earnestly trying to raise teaching and research, theory and practice to the level they had reached in other civilised countries, and in this endeavour nothing could be more helpful than close relations with the headquarters of British medicine. They hoped that these relations would become more and more close and cordial and that they would have the pleasure of welcoming British medical men to Jugoslavia, though their medical institutions were only at the beginning of their development. A few days ago they had had the privilege of seeing at Belgrade Prof. Leonard Findlay, of Glasgow, and had listened to a most interesting lecture from him. They would be happy if other representatives of British medicine and science would follow his example. Dr. Ainsworth Davis then exhibited Dr. R. Canti's film showing the cultivation of healthy and cancerous tissues under the microscope and the action of radium emanation upon them. This film had been lent by the British Empire Cancer Campaign.

LONDON HOSPITAL DINNER.—On Oct. 17th a large body of former students did their best to bring a London Hospital atmosphere into the ballroom of the May Fair Hotel—which is a long 4*d.* bus ride from their spiritual home. The attempt owed much of its success to the skill with which Mr. Hugh Lett as chairman supplied them with facts of common interest. Uppermost in his mind were the changes confronting voluntary hospitals under the new Local Government Act—changes which, he said, were necessarily causing acute financial anxiety. Local authorities in London, with 70,000 beds at their disposal, would be strong competitors against the charitable institutions with their 30,000, and to resist this competition the voluntary hospitals must show that they were fit to survive. He had no doubt that the London could show such fitness by its research and teaching and by spreading sound medicine and surgery throughout the world. The Freedom Research Fund placed a larger sum of money at its disposal than was available for investigation at any other school in the country. While the new municipal hospitals could do admirable curative work they could not undertake medical education ; they could not have the same clinical field ; they would lack the fine laboratories and the wonderful pathological department ; and in general they would not get the same stamp of man for their staffs. But if the London was to hold its own it ought to have better quarters for students, and a new hostel was urgently needed so that suitable men should not be put off by the lack of accommodation. In sport the record of the present students was admirable.

They had been well in the running for nearly all events, being beaten by 3 points in the Rugger final, and finishing in the semi-finals of the cricket and hockey. They had won the rifle cup, and (incidentally) the tug-of-war for the third year in succession. For old students of the hospital a post-graduate course was now in successful progress, and he welcomed this new departure because it would help to prevent London men from feeling themselves dissociated from their hospital. It was wrong that those who had spent five years there should come back as strangers, and he wished that they would more often return and introduce themselves to members of the staff on rounds in the wards or in the out-patient department, when they would be sure of a warm welcome. After referring to the work of Lord Dawson, Sir Hugh Rigby, and Sir Robert Stanton Woods during the King's illness, Mr. Lett went on to speak of senior members of the company present. These included Rampley, long in charge of the single operating theatre of the hospital, now in his eighty-sixth year, and the guide and friend of many generations of students; Sir Alfred Rice-Oxley; and Sir James Clark, son of Sir Andrew Clark. Their names recalled to Mr. Lett the days when general surgeons operated on everything; when there were no rubber gloves and sterilisation of the hands was carried so far that one surgeon used to snip off bits of his assistants' fingers and make cultures to see that they were sterile; when information about cases had to be sent up to Harley-street in a cab; when "compulsory anæsthetic" was an apt description of a process which often needed the coöperation of a member of the Rugger XV.; when the routine was that patients with fractures should be treated preventiyely for delirium tremens; and when the staff were met by their house surgeons in pomp and circumstance and morning coats.

Mr. George Neligan proposed the health of the chairman. "You will find him," he said, "in every walk of the life of the hospital, doing his work quietly; and if he gets what he wants then the thing is a success." Mr. Neligan believed that nowhere would be found a happier staff than that of the hospital at the present day, and so long as it contained men like Mr. Lett he failed to see how any Act of Parliament could do it down. After the chairman's health had been drunk to appropriate music, Mr. E. C. Lindsay said a few words as joint secretary of the dinner, and Dr. Russell Andrews told only one story—his meagre answer to a demand which has to be satisfied before any London Hospital dinner can be called complete.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 28th.—8 P.M., ODONTOLOGY. Presidential Address. Mr. J. McK. Ackland: Oral Sepsis in its Relation to General Disease, Casual Communication. Mr. F. N. Doubleday: Two Cases of Hypertrophy of the Jaw.

FRIDAY, Nov. 1st.—10.30 A.M., OTOLOGY (Cases at 9.30 A.M.). Presidential Address. Mr. W. M. Mollison: Triumphs and Failures of the Mastoid Operation. Papers have been promised by Mr. G. J. Jenkins, Mr. L. Graham Brown, and Mr. J. P. Stewart. Cases will be shown by Mr. Mills, Mr. L. Graham Brown, and others. 5 P.M., LARYNGOLOGY (Cases at 4 P.M.). Cases will be shown by Mr. W. S. T. Neville, Dr. Dan McKenzie, Mr. V. E. Negus, Mr. H. A. Kisch, Mr. T. B. Layton, and others. 8.30 P.M., ANÆSTHETICS. Discussion on Avertin Anæsthesia. Openers: Dr. J. Blomfield and Sir Francis Shipway.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 28th.—8.30 P.M., Discussion on Radium Therapy, to be introduced by Mr. A. E. Hayward Pinch and Prof. Sydney Russ.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Oct. 28th.—5 P.M., Mr. C. P. Wakeley: Specimens of Calculi.

FRIDAY, Nov. 1st.—Sir Arthur Keith: Spinal Deformities in the Sacro-iliac Region.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 28th, to SATURDAY, Nov. 2nd.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Lecture by Dr. Maurice Davidson: Coughs. No fee. Tues., 8.30 P.M., Lecture by Dr. A. F. Hurst: Recent Work on Disorders of the Stomach. Fri., 8.30 P.M., Lecture by Dr. J. W. McNee: Recent Views on Diseases of the Liver and Biliary Tract. Specially suitable for M.R.C.P. candidates.—ST. BARTHOLOMEW'S HOSPITAL, City-road, E.C. Thurs., 1.30 P.M., Demonstration of Cases in the Wards by Sir Thomas Horder. No fee.—SAMARITAN HOSPITAL FOR WOMEN, Marylebone-road, N.W. Thurs., 10 to 12.30 P.M., Gynæcological demonstration by Mr. McKim McCullagh. No fee.—METROPOLITAN HOSPITAL Kingsland-road, E. Special post-graduate course in Medicine, Surgery, and Special Branches. Daily, 10.30 A.M. to 5.30 P.M., demonstrations, operations and lectures.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Fri., 5 P.M., First of four weekly demonstrations in Antenatal Treatment by Prof. Dame Louise McIlroy.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Third week of course of Clinical, Ear, Nose and Throat work. All day.—Further particulars from the Fellowship of Medicine.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

FRIDAY, Nov. 1st.—4 P.M., Dr. W. J. O'Donovan: Skin Diseases Common to Animals and Man.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 30th.—4.30 P.M., Mr. Stanford Cade: The Limitations of Radium Therapy on Genito-urinary Diseases.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 29th.—5 P.M., Dr. K. Sibley: Principles of Treatment. Local.

THURSDAY—5 P.M., Dr. H. G. Burford: Pathology Demonstration.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 28th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.

FRIDAY, Nov. 1st.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.6.

MONDAY, Oct. 28th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Wards.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw, Medical Out-patients. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. 4.30 P.M., Dr. Carter Braine: X Ray Therapy.

THURSDAY.—11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.

Daily, 10 A.M. to 5 P.M., Medical, Surgical and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

NATIONAL HOSPITAL, Queen-square.

MONDAY, Oct. 28th.—12 noon., Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Syphilis of Nervous System.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: Disorders of Memory.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: Nervous Symptoms in Sinusitis.

FRIDAY, Nov. 1st.—12 noon., Dr. Purdon Martin: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Some Infectious Diseases of Nervous System.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Oct. 30th.—3.30 P.M., Dr. T. J. Hoskin: Heart Affections: Cause and Prevention.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 30th.—4 P.M., Dr. A. F. Hurst: The Asthma Problem.

FRIDAY, Nov. 1st.—5 P.M., Prof. R. A. Peters: Coördinative Biochemistry of the Cell and Tissues. (Third Harben Lecture).

ROYAL ANTHROPOLOGICAL INSTITUTE.

FRIDAY, Nov. 1st.—5.30 P.M. (in the Polytechnic Hall, Great Titchfield-street, W.), Dr. G. Elliot Smith: The Evolution of Man (Public Lecture).

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

MONDAY, Oct. 28th.—5 P.M., Dr. J. S. Owens: Atmospheric Pollution.

CHADWICK PUBLIC LECTURES.

TUESDAY, Oct. 29th.—5.15 P.M. (at the House of the British Medical Association, Tavistock-square, W.C.), Prof. J. Boeke (Utrecht): The Tissues of Youth and Age.

FRIDAY, Nov. 1st.—5.15 P.M., The Nervous System in Relation to Health.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL, Albert Embankment, S.E.

TUESDAY, Oct. 29th.—5 P.M., Dr. A. St. G. Huggett: Physiology of the Fœtus. (Fourth lecture.)

CONFERENCE ON MENTAL HEALTH, Central Hall, Westminster, S.W.
WEDNESDAY, Oct. 30th.—8.30 P.M., Inaugural Meeting. Sir Maurice Craig, Dr. Letitia Fairfield, Sir Frederick Willis, Dr. F. E. Fremantle, M.P., and others. (Chairman: Lord Brentford.)
THURSDAY.—4.30 P.M., Dr. H. Crichton-Miller, and others: Sex Education. 6 P.M., Working of the Juvenile Courts. 8 P.M., Dr. Millais Culpin and Prof. Winifred Cullis: Personal Equation in Industry.
FRIDAY, Nov. 1st.—2.15 P.M., Dr. H. P. Newsholme and others: Place of Mental Hygiene in Social and Public Health Work. (Chairman Sir George Newman.) 4.30 P.M., The Child and the Parent. 8 P.M., Dr. J. A. Hadfield and others: Delinquency, A Problem in Mental Hygiene.
SATURDAY, 11 A.M., Dr. E. A. Hamilton-Pearson and others: The Problem Child at Home and in School. (Chairman: Dr. R. H. Crowley.)

KING'S COLLEGE FOR HOUSEHOLD AND SOCIAL SCIENCE, Campden Hill-road, W.
FRIDAY, Nov. 1st.—5 P.M., Prof. V. H. Mottram: Human Nutrition. (Third of six lectures.)

KING'S COLLEGE, Strand, W.C.
TUESDAY, Oct. 29th.—5 P.M., Mr. J. W. Pickering, D.Sc.: Blood Plasma and Platelets. (Fourth lecture.)
THURSDAY.—5 P.M., Mr. J. A. Hewitt, D.Sc.: Metabolism of the Carbohydrates and Fats. (Third of four lectures.

UNIVERSITY COLLEGE, Gower-street, W.C.
MONDAY, Oct. 28th.—5 P.M., Dr. R. J. Brocklehurst: Secretion of the Digestive Juices. (Third of four public lectures.)
FRIDAY, Nov. 1st.—5.30 P.M., Mr. C. S. Elton: The Future of Animal Ecology. (Second of three lectures.)

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Oct. 29th.—4.15 P.M., Mr. G. Jefferson: Concerning a Series of Pituitary Tumours.
FRIDAY, Nov. 1st.—4.15 P.M., Dr. W. Sage Sutherland: Uses of Antiscarlet Fever Antitoxin.

ANCOATS HOSPITAL, Mill-street, Manchester.
THURSDAY, Oct. 31st.—4.15 P.M., Dr. A. Renshaw: Cystological Changes in the Blood and their Significance

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.
FRIDAY, Nov. 1st.—3.30 P.M., Dr. Grout: Radiological Examination of the Gastro-intestinal Tract.

Appointments.

BATES, H. T., M.B., B.Ch., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Addingham District of the County of York, West Riding.
CLARK, R. J., M.B., Ch.B. Aberd., D.P.H., Medical Officer of Health, Cheshire.
POTTS, T. N. V., M.D., B.S. Durh., D.P.H., Medical Officer of Health to the West Riding County Council.
SHARMAN, ALBERT, M.B., Ch.B. Glasg., Extra-Surgeon, Out-patient Department, Royal Samaritan Hospital for Women, Glasgow, to a McCunn Research Scholarship in Gynæcological Surgery.

Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Elder Professor of Anatomy and Histology. £1100.
Barnsley, Beckett Hospital and Dispensary.—Jun. H.S. £140.
Bath, Royal United Hospital.—Asst. H.S. At rate of £100.
Bedford County Hospital.—Asst. H.S. At rate of £130.
Bethnal Green Hospital, E.—Asst. M.O. £350.
Birmingham City.—M.O. for Maternity and Child Welfare. £600.
Birmingham General Hospital.—H.P. £70.
Bolton, Townleys Hospital, Farnworth.—Second Asst. M.O. £225.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Bradford Royal Infirmary.—H.P. £150.
Brighton, Sussex Maternity and Women's Hospital.—Res. H.S. £130.
Cambridge, Physiology School.—George Henry Lewes Studentship in Physiology. £250.
Cancer Hospital, Fulham-road, S.W.—Part-time Research Radiological Asst. 1 gn. each attendance. Also H.S. At rate of £100.
Cardiff, Glan Ely Tuberculosis Hospital, Fairwater.—Asst. Res. M.O. £250.
Carlisle, Cumberland Infirmary.—H.P. At rate of £155.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Asst. S.
Charing Cross Hospital, W.C.—Hon. Clin. Asst. for X Ray Dept. Also Res. M.O. £350.
Chester Royal Infirmary.—H.S. £120.
Coventry and Warwickshire Hospital.—Res. H.P. £160.
Derby, Derbyshire County Sanatorium, near Chesterfield.—Res. Asst. M.O. £350.
Dewsbury County Borough.—M.O.H. and School M.O. £900.
Dover Borough.—Asst. M.O.H. £700.
East Ham County Borough.—Deputy M.O.H., &c. £700.
Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—H.S. to Special Depts. At rate of £130.
Gloucester, Gloucestershire Royal Infirmary.—Second H.S. At rate of £100.
Gravesend and North Kent Hospital.—Jun. H.S. At rate of £80.
Great Yarmouth General Hospital.—Jun. H.S. £125.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. At rate of £250.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.
Hull Royal Infirmary.—Hon. Ophth. S.
Italian Hospital, Queen-square, W.C.—Res. M.O. At rate of £150.
Jersey General Hospital, &c.—Res. M.O. £200.
Kingston-upon-Hull City and County.—Asst. M.O.H. £600.
Leicester, Leicestershire County Council.—Asst. County M.O.H. £650.
Liverpool, Alder Hey Children's Hospital, West Derby.—Res. Asst. M.O. £200.
Liverpool County Borough.—Jun. Asst. Sch. M.O. £600.
London Hospital, E.—Dental Anæsthetist.
London Jewish Hospital, Stepney Green, E.—Hon. Asst. Radiologist.
Manor House Hospital, Golders Green, N.W.—H.S. At rate of £200.
Middlesex Hospital and Medical School, W.—Medical and Surgical Registrar. £300.
Miller General Hospital, Greenwich-road, S.E.—Orth. H.S. At rate of £150. Hon. Surg. Also Hon. Physician to Skin Dept.
Northwood, Mount Vernon Hospital.—Asst. Pathologist. £500.
Nottingham General Hospital.—Second Cas. O. At rate of £150.
Oldham, Poor-law Institution, Rochdale-road.—Res. Asst. M.O. £200.
Plymouth City.—Asst. M.O.H. for Maternity and Child Welfare Dept. £600.
Portsmouth Royal Hospital.—Sen. H.S. At rate of £175. Also H.P. and two H.S.'s. Each at rate of £130.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Med. Reg.
Queen's Hospital for Children, Hackney-road, E.—Clin. Asst. for Orthopædic Dept. 5*s.* each attendance. Cas. O. £100. Also Surgeon to Ear, Nose and Throat Dept.
Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.
Royal London Ophthalmic Hospital, City-road, E.C.—Surgeon to Ear, Nose and Throat Dept. Also Out-patient O. £100.
Royal Naval Dental Service.—Dental Officers.
Royal Society, Burlington House, W.—Foulerton Research Student. £700.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—Clin. Assts.
Sheffield City Hospitals, Infectious Diseases.—Res. M.O. £350.
Sheffield University, Faculty of Medicine.—Lecturer in Pathology. Also Demonstrator in Pathology. Each £500.
Southern Rhodesia Government.—Director of Public Health and Medical Services. £1750.
Stroud General Hospital.—H.S. At rate of £125.
Swanley, Kent, Alexandra Hospital for Children with Hip Disease.—Res. Asst. M.O. At rate of £300.
Walsall General Hospital.—Sen. H.S. Also H.S. At rate of £200 and £150 respectively.
West End Hospital for Nervous Diseases, Welbeck-street, W.—Hon. Asst. Physician.
Weymouth and District General Hospital.—H.S. £180.
Windsor, King Edward VII Hospital.—Hon. Asst. S.
Worcester General Infirmary.—Sen. Res. M.O. £180. Also Jun. Res. M.O. £120.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Ammanford (Carmarthen) and Milborne Port (Somerset).

Births, Marriages, and Deaths.

BIRTHS.

ADDISON.—On Oct. 18th, at Wilbraham-place, S.W., the wife of Dr. G. M. Addison, of a daughter.
FARMAN.—On Oct. 7th, at Haverstock-Hill, N.W. the wife of Dr. Noel B. Farman, of a son.
MATHEWS.—On Oct. 14th at Kirkby Lonsdale, the wife of R. G. Mathews, M.B., B.Ch., of a son.
REICHWALD.—On Oct. 20th, at Timber Hill, Ashtead, Surrey, the wife of Dr. M. B. Reichwald, of a son.

MARRIAGES.

BARNES—NEWMAN.—On Oct. 16th, at St. Philip's Church, Kensington, Warren Alston Barnes, M.B., B.Ch., to Helen Newman, M.B., B.S., elder daughter of the Rev. and Mrs. Herbert Newman, of Stone, near Ashford.

DEATHS.

BEVAN-LEWIS.—On Oct. 14th, William Bevan-Lewis M.Sc., L.R.C.P., M.R.C.S. Eng., of Priory-street, Cardigan, aged 82 years.
LEE.—On Oct. 15th, at "Sainssoins," Little Shelford, Cambridge, Crichton Stirling Lee, M.R.C.S., L.R.C.P., aged 50.
ROUSE.—On Oct. 14th, suddenly, at Monte Carlo, Rolla Edward Rouse, M.D., in his 70th year.

N.B.—A fee of 7s. 6d is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE HEALTH AND CONDITIONS OF WORK OF MEDICAL STUDENTS.*

By E. GRAHAM LITTLE, M.D., F.R.C.P., M.P.,
PHYSICIAN IN CHARGE OF THE SKIN DEPARTMENT AT ST. MARY'S HOSPITAL.

I. Health.

My choice of subject was dictated by the consideration that I gave the corresponding inaugural lecture last year upon the Health of the Doctor, and it was suggested to me that an inquiry into the health of the embryo doctor might be useful. I was filled with consternation, however, when I began to come to grips with the subject, at the nearly complete absence of any data, which had been quite abundantly present in the case of the Health of the Doctor, as there is a well-defined category of statistics concerning the health of general practitioners in the compilations of the Registrar-General's Office, but there is no category of medical students.

Sir James Paget's Analysis.

The only direct reference to the subject which I have been able to find is a very short paper by Sir James Paget, published in St. Bartholomew's Hospital *Reports* for 1869. Paget there considered the question under the heading, What Becomes of Medical Students? and his inquiry is not entirely limited to the stage of pupilage, nor is the chief attention given to the health of the persons considered so much as to their achievement. But out of a round number of a thousand of his own pupils whom he thus passes in review, 41 actually died during pupilage, 15 failed to qualify, and 96 relinquished the profession after beginning either its study or its practice. Of the 41 who died, 17 are recorded as suffering from tubercle and 2 committed suicide. It is interesting to note that 87 died after beginning practice, one of whom was hanged for murder, the notorious Palmer of Rugely, who, Paget remarks caustically, "was an idle, dissipated student, cursed with more money than he had either the wisdom or the virtue to use well." Paget began his paper with the remark that he was not aware that any attempt had been made previously to answer his question, and I have been unable, as I have said, to find any reference to the matter I am now considering since Paget wrote. I am hopeful, therefore, that the subject will not at any rate be a hackneyed one.

In the last annual report of the Ministry of Health (June, 1929) the statement is made that the sum estimated for the current year as being required to carry out the service of that Ministry is not less than £23,028,000, a sum which is nearly a million more than for the previous year. The value of these services rests almost entirely upon the fitness of medical men and women to perform the duties required, and the preparation of the army of practitioners who will be called upon to execute these functions becomes a matter of considerable public importance. When one considers the enormous increase in the complexity of the education of the medical student since Paget's time, and notably the extension of the actual duration of his training, one would perhaps surmise that the mortality of students, both as regards their relinquishing the profession as well as being invalided or dying out of it, would be materially increased.

Inquiry of Deans of Medical Schools.

Unhappily, it has been extremely difficult to get any reliable information upon these points. As a preparation for this paper I sent out a letter to the deans of all the principal medical schools in the British Isles, and I have received a large number of replies, which I shall roughly analyse. (1) A preponderant number replied that they had no data, and could not obtain them. (2) A considerable number replied that, while furnishing no actual figures, the writers were convinced that the mortality from illness amongst medical students was very small, quite a curious consensus of opinion placing it as "about 1 per cent." More definite information has been supplied by two schools, Leeds and St. Mary's Hospital. The following letter from the Dean of the Medical School of Leeds is reproduced with his permission.

Health of Medical Students at Leeds.

"I can only speak," he writes, "in general terms. Before the war I noted that the mortality or disability from tuberculosis was about 5 per cent.—i.e., about one each year, in an entry of 20. I do not remember any other cause of withdrawal. We lost no student by infectious disease or abdominal trouble, and certain cases of death from pneumonia occurred in students who had withdrawn for other reasons.

"Since the war there have been very few cases of tubercle, and some deaths from influenza and cerebro-spinal meningitis not to be attributed to the line of life. I have attributed the decrease of tubercular cases to the better conditions of student life, as all lodgings must be inspected and registered, and the facilities for outdoor exercise have increased vastly. Daylight saving and the decrease of monkeying about town in the evening may have had an influence, but it has to be noted that the tubercular cases pre-war occurred usually in students of very orderly lives in that respect.

"The student of the present day spends far more time out of doors, and I note that there is much less difference in his condition at the beginning and end of terms than there used to be. In pre-war days the student had little recreation without much trouble in transport. Now he can work in a game of tennis all the year round, or a game of golf, instead of crawling out to a pub. with a billiard table."

Withdrawal of Students at St. Mary's Hospital, London.

The following statistics have been prepared from a list of some 460 entries to St. Mary's Hospital Medical School between 1917 and 1924, the number of men and women students being approximately the same.

Number of students who, having entered upon a medical course, fail to qualify .. .. 9·3 per cent.
(Men, 13·5 per cent; women, 5·1 per cent.)

Number falling out at the various stages of the curriculum—

(*a*) Before completing the first exam. .. 4·9 per cent.
(Men, 7·6 per cent.; women 2·2 per cent.)

(*b*) Before completing the second exam. .. 1·7 per cent.
(Men, 2·5 per cent.; women, 0·9 per cent.)

(*c*) After completing the second exam., and before becoming qualified .. 2·7 per cent.
(Men, 3·4 per cent.; women, 2·00 per cent.)

Reasons for Withdrawal.

Men.—Of the 32 withdrawals dealt with during the above eight years, the following were the causes so far as can be ascertained.

(1)	Ill-health (Lung trouble, 2; shell shock, &c., 2; mental, 1.)	5
(2)	Financial difficulties	6
(3)	To take up good business openings	2
(4)	Failure to take an interest in the work	8
(5)	Suspended for misconduct	2
(6)	Uncertain (but not ill-health)	9

Women.—(12 withdrawals).

(1)	For the purpose of being married	6
(2)	Personal ill-health ("lung trouble")	1
(3)	Illness of relations	1
(4)	Suspension for unsatisfactory work	2
(5)	Uncertain (not ill-health)	2

It will be seen from these records that tubercle still seems to head the list of causes of death or withdrawal amongst medical students, and it is of some significance in this connexion to note the reply from Guy's Hospital, in which the statement is made that two house officers during the last five years were obliged to give up their appointments on account of tubercle. In only one reply has suicide been mentioned as a cause of death.

Comparison of English and American Systems.

The strenuous character of the present-day training of medical students, a training which involves very hard and continuous study for an average period of seven years between the entrance examination and qualification, marks out medical students as a class apart, and perhaps justifies my considering this question from this limited point of view. We have practically no statistics in this country of the health of students in general, but a considerable volume of literature from American sources upon this subject is now available, to which I shall refer in a few minutes. Health Education Service, as this has come to be named, forms a very important part of the administration of American universities and schools, and one cannot but regret that the subject has received no attention in this country where haphazard methods still rule. The American student nowadays is very carefully "vetted" before he is allowed to come to college, still more carefully examined for his physical fitness to undertake an industry or profession, and most severely of all for his suitability to enter upon arduous athletic exercises.

It will perhaps be contended that our system, which is lacking in all these features, succeeds by survival of the fittest, but this is surely a somewhat expensive and unscientific method of dealing with the circumstances involved. To wait, as is sometimes recommended by shortsighted observers, for treatment until the individual feels ill, which is still too much the habit with our people, is both unscientific and desperately uneconomical. Most sensible persons nowadays make a point of visiting their dentists two or three times a year, even in the absence of symptoms of

* An address given at the Royal Institute of Public Health on Oct. 16th, 1929.

toothache; and the same precautions should obviously be followed in other departments of medical practice. It is, I think rightly, contended by the advocates of the American careful methods of examination at college that the young people who have been through this mill become apostles of health and spread far and wide more scientific conceptions as to the care of mind and body than prevail amongst those not so instructed, and a still further ultimate advance in the high standard of health amongst the American population may be confidently anticipated. The American universities, where co-education is the rule, also supply some data on the relative resistance of men and women to wear and tear of training for professions generally. In our schools, where co-education is much more recent and on a very much smaller scale, no sufficient data are available.

The time is ripe, I think, for a consideration on broad lines of the health of students in general, both in secondary schools and in universities, and it is an anomalous fact that his consideration is given very meticulously in the secondary schools which are under State or municipal control but hardly at all in the great public schools of the country and in the universities, both of which categories are under voluntary management as distinguished from State or municipal management. There is no brighter outlook for the operation of preventive medicine than in this particular function of watching over the health of the adolescent and the young adult. The results obtained from the care given by the State to this function are so encouraging as to force upon us the conviction that medical watchfulness should be exercised in all departments where young people are undergoing a community education, whether at the expense of the State or of the individual. Some interesting comparisons have been made of the physique of public school boys as compared with boys attending State schools, and hitherto the comparison has been in favour of the public school boy who obviously starts with greater advantages, coming as he does from well-to-do households as compared with relatively poorer surroundings. But the later examinations are more and more proving that the State-educated adolescent is fast catching up, and even surpassing, the public school boy in this matter of physique. That some of the conditions of life at public schools require radical alteration was borne in upon me by a recent professional experience. I was consulted about an outbreak of body ringworm in an old-established house at one of the greatest and most famous of our public schools. The house contained 40 boys, all of whom were found to be infected, and the matron and housemaster, whom I interviewed, admitted that it was the rule, owing to the paucity of bath rooms in an old-fashioned house, for ten boys to use the same water one after another, and the promiscuity which such conditions inevitably engender very amply explains the overwhelming character of the epidemic in that particular house.

American Health Service.

The care taken by American colleges in sifting students before entry has no counterpart in this country, and I submit that we have much to learn from American methods. Although the American Health Service, as it is called, is of comparatively recent establishment, some valuable data have already been afforded. It is interesting to note that the principle was in the first instance initiated nearly half a century ago by the enterprise of some women investigators who were concerned to find that women students compared unfavourably in health conditions with men, and proceeded to ask why. Periodical medical examinations and careful "vetting" of women students began at once to make a difference so perceptible that the men copied the idea. Very much of the high health standard of the American people is due to the coöperation and intelligent watchfulness of women who, during the last 30 years, have learned from their college days to busy themselves as housewives, with the nutritive value and the purity of foodstuffs, and by unity of action through the agency of leagues or unions of consumers throughout the country have been able to insist upon the supply of better food. To quote one item only, the quality of American milk is immeasurably better than the quality of milk sold in this country, and I understand that probably as a result glandular tuberculosis is non-existent in the United States.

These health services have spread all over the colleges of the United States. Here are some examples of what is done. At a great industrial college in the United States inquiries are made of intending applicants for entry (1) whether the applicant should come to college at all; (2) what form of industrial occupation he may be physically fitted to undertake if admitted; (3) how he may improve his physical condition so as to make the most of his opportunities both in industry and at college; and searching inquiries upon these subjects are made through the medium of family practitioners, whose coöperation is usually readily obtained. Several interesting facts have become apparent from a study of these American statistics. In a prominent women's college, for example, the unexpected finding was that women students tended to show an actual deterioration of health during college life as compared with the men in a similar college. The figure quoted states that the women dropped 16 per cent. while the men gained 6 per cent., a contrast explained by the writer as being due to the women taking their work too seriously, and he forms the pessimistic axiom: "the higher the intellectual attainment in the subjects of health and disease, the lower seems the health intelligence. The greater the theoretical knowledge of health, the poorer seems the practice."

Another index to the value of leisure and healthy exercise is afforded by a comparison of the health of self-supporting students, that is to say, students who maintain themselves by other occupations during their study, a feature much more common in American than in British colleges. The health of students thus working overtime, as it were, compared unfavourably with the health of students who were not so handicapped, and illness in women of this class was more than twice as large as in men of the same class.

University of Minnesota.

In the University of Minnesota, with a student body of 10,000, of whom about half are stated to live at home, the health service is a very elaborate and important part of university administration. Its expenses are partly met by a compulsory fee exacted from each student, constituting about half of the actual expense of the service. The completeness of provision for overhauling disease actually provided in this University[1] is indeed remarkable. A very efficient medical service on a part-time basis has been developed and is under the direct control of the President of the University through a subordinate officer called the Director of the Health Service. The examinations conducted by this service include entrance physical examinations, periodic health examinations, and special physical examinations. Defects and abnormalities which are discovered by the entrance examinations are followed up during the school year with remarkably beneficial effects in a series of departments, such as general medicine, eye, ear, throat, &c. An improvement in defects averaging 60 per cent. was noted. Special physical examinations are exacted of students who wish to participate in athletics, and the American student is thus very thoroughly "vetted" for the particular form of athletics which he may wish to practise. An extensive out-patients' service forms part of the machinery of defence against disease, and ample provision is made for infirmary treatment, the compulsory fee covering a certain measure of infirmary treatment every year. Vaccinations, immunisations, immunity tests, are extensively used. One of the most important and typical of the measures taken in this service is the careful watch kept upon nutrition; observation is made of the student's diet, and his habits of eating, sleeping, recreation, worry, work, &c. The provision of medical services upon the spot naturally effects a great saving of time, and the accessibility of the department may be gauged by the use which the students make of them. For example, during the year 1925–26 about 1800 students made 8772 visits to health departments, exclusive of the entrance dental examination which is one of the largest departments in the University. The number of hours per week actually given by the medical staff is comparable to the service at a great teaching London hospital.

University of Cornell.

Another valuable contribution is in a paper[2] upon the organisation of health education at Cornell University, New York, by the medical adviser, Dr. D. F. Smiley, who states that for the last three years each entering class at Cornell University has shown progressively fewer physical defects and faulty health habits than the preceding class. The means adopted at Cornell University are very fully detailed in this paper, and the sense of responsibility towards the students entertained by the University authorities is clearly very much better developed than it is with us. There can be no question also that, as Dr. Smiley remarks, these inquiries furnish the most admirable opportunities for research in the field of health-education amongst students in general, and should furnish also data for estimating the incidence, and perhaps the causes, of numerous minor disorders—colds, glycosuria, the effect of exercise upon minor abnormalities of the heart and vessels. &c.

The actual institution of these services at Cornell dates from 1919, so that they have now had ten years working of the full programme, but hygiene had been a subject of instruction at Cornell since its foundation in 1868. The department is under the control of a committee of four members appointed by the President of the University who retains a coördinating control. It is operated

[1] Journal of Preventive Medicine, 1927, p. 377.

[2] Public Health Reports (U.S. Public Health Service), 1929, 2631.

physicians, and it has been found that full-time physicians are preferable to part-time physicians; that men physicians are preferable for men, and women physicians for women; that young physicians are better than old ones; and practical experience has shown that there is enough work to employ one physician for every 500 students, and it is hinted that this proportion must be soon increased. The activities of the Department of Hygiene are described under five headings: (1) health examination; (2) medical consultation; (3) communicable disease control; (4) health education; (5) research. Every undergraduate and every entering graduate is required to have annual physical examination. No athlete is permitted to represent the University on an athletic team without having qualified or and procured a certificate from the medical adviser's office. Medical services are open daily from 9 A.M. to 5 P.M., and something like 25,000 voluntary consultations are recorded per year. Each student pays $5 a term for the services, which includes the free use of the University infirmary in cases requiring bed-treatment.

The value of this method is demonstrated by the experience of an epidemic of influenza occurring in the year in which the report was written. Early treatment, rendered practicable by these conditions, of 658 cases of influenza resulted in keeping the incidence of pneumonia after influenza to less than 1 per cent. of the total number of cases, an incidence which compares very favourably with the usual statistics of influenza. These careful measures further allow of the compilation of extremely useful statistics. Lost time during the year amongst 3724 men students was 1·1 per cent., and amongst 1173 women it was 1·8 per cent., figures which compare favourably with an earlier inquiry at Cornell by Dr. Emerson in 1919–20, when the loss of school hours was for the men 1·5 per cent. and for the women 2·4 per cent., and this is notwithstanding the disturbance of the statistics occasioned by the very severe influenza epidemic in 1926.

The Life Extension Institute.

The actual monetary value to the State of the improvement in the health of individual citizens resulting from periodical medical inspection is demonstrated in a series of papers contributed by experts in life insurance, a subject much more carefully and scientifically studied in the States than here. A group of men prominent in American public life, including Surgeon-General Gorgas of Panama fame, ex-President Taft, Dr. Fisk, and Dr. Ley, in 1914 started a scheme of periodical health examinations conducted under the auspices of an institution founded by the group and called the Life Extension Institute. The services of this body were taken advantage of in the first instance by the great insurance company, the Metropolitan Life Insurance Company of New York, and a very significant review of the results obtained after six years' experience is contributed by Dr. Storey. During that period the company had medically examined on this system of periodical examinations about 6000 people at a cost of $60,000, and had gained, through the premiums of persons whose lives had been extended as a result of these examinations and the correction of minor defects, no less a sum than $120,000; the company had thus made 100 per cent. on its investment, and its example was speedily followed by numerous other insurance companies, so that it is stated that the Life Extension Institute has examined over half a million patients since its inception. A consideration of nine years' operation of these services showed a reduction of 18 per cent. in the death-rate of policy-holders affected, and amongst a group of impaired lives a reduction of over 50 per cent. in the death-rate. With the typical American business grasp, in another paper the capital value of this improvement in health is carefully assessed and set out. The money-equivalent of this improvement is estimated at no less a sum than 3450 million dollars in the year 1924. The figures are based on the estimate of the value of the individual to his or her family or dependents, and upon this basis the curious comparison is made that while in 1922 the material assets, other than this human capital, in the United States was 321,000 million dollars, the human capital upon the principle just described was, in 1924, nearly five times as great, and the business value of this system of health service is thus very abundantly demonstrated.

II. Conditions of Work.

With regard to the conditions of work of medical students, which is the second title of my paper, these have changed radically, even since the time of Paget, as to make comparisons difficult between the present-day conditions and those of earlier years. Unhappily the transcendent genius of Dickens has stamped his presentation of medical student life in the persons of Bob Sawyer and Ben Allen upon the minds of successive generations as being typical of medical student life in general. Even in Dickens's day this picture must have been a caricature, and no other picture has been drawn upon the same subject with any distinctiveness or force since he wrote the immortal "Pickwick." With the exception of some slight sketches by Conan Doyle the medical student does not seem to have figured since that date in English literature. The preparation for the profession of medicine has become so arduous and so absorbing that the medical student is kept to the grindstone very completely throughout the long seven years which form the average period of study. Nevertheless, it has become apparent from a study of the meagre statistics available that health conditions have improved very considerably, even in England. Housing of medical students, though still too little thought of, is immeasurably better, especially in the case of the big towns. As mentioned, the Dean of Leeds University regards the improvement under this heading as being largely responsible for the better general health of medical students noticeable even since the war.

The life of the medical student in the London schools differs very considerably, and must differ, from that of the fortunate student at the older residential universities. It is one of the disadvantages of the excellent training given in London that the student is restricted to intercourse with his own fellows and is not, as at a university, very easily able to mix with students of other faculties. This restriction, while mischievous in some respects, engenders in the student an extraordinarily ardent, if narrow, patriotism for the school at which he has been educated. To a member of a London school, such as Guy's or St. Bartholomew's, his hospital and all its interests acquire almost the force of a religion, and the friendships made in this narrow environment are often lifelong and abiding. Indeed, it is something of a reproach that there is so little understanding of or sympathy with other schools on the part of the students of one school. A rigid favouritism is apt thus to grow and to be reflected in the phenomenon that it is seldom that the choice of members to fill vacancies on the staff goes outside the magic circle of the school, a condition of things which is happily breaking down at present under the stress of new university appointments, now made by the University of London, with the financial help of the University Grants Committee.

Study and Relaxation.

With the drive exercised by the necessity of passing an ever-increasing number of increasingly difficult examinations the conditions of pupilage have changed very notably. It is no longer possible, as it was when I was a student, for a man to remain, as one of my fellow-students actually did, at his hospital for more than 18 years, at the end of which period he had not taken his first qualification. Much more control is exercised now upon the work of the student, and the incorrigibly idle or incompetent student is asked to leave his hospital after a certain period of probation if he should have failed to mend his ways. It is not surprising that with so persistent and so harassing a study the need for relaxation in sport and other outlets for energy is greater in the case of the medical student than perhaps in the case of any other class, and the cultivation of athletics has almost gone beyond reasonable limits in many medical schools, where the prizes of resident appointments are often given more for athletic prowess than for academic distinction. The rebound of the medical student from close application is sometimes a little exuberant, as for example in the regrettable incidents which recently attracted the notice of the London police-courts when medical students disturbed the proceedings of an antivivisection meeting. But the astonishing sobriety and restraint of medical students of the present day as a class offers indeed a sufficient contrast to the attitude of mind depicted by Dickens, and to the general conception of medical students still prevailing with a large number of people.

Medical study has become in our own generation completely transformed by the advance of medicine in its scientific outlook. With the immense increase of scientific discoveries new subjects have been continually added to the curriculum, and at the present moment the medical student has to be "signed up," as it is called, that is, certified as having attended, classes in something like 40 subjects. There seems to be no finality in this accretion, and it has long been obvious that certain changes are necessary in the preparation of the student. The period of study, which now approximates to seven years, cannot well be extended; some rearrangement of subjects must therefore come about. The present duration of the training requires so large an expenditure of time and money, both on the part of teaching schools and of students, that the profession of medicine is becoming more and more restricted to those who start with considerable private means and who enjoy an unusual degree of vigour and ability, and doubtless

this latter feature accounts for the relatively small mortality; the student is a picked student from the beginning.

Numbers Seeking Entry.

It is interesting to note the variation in numbers seeking entry into the profession. Thirty years ago the average entry in the British Isles had been about 1800. It dropped during the next decade and a half to something like 1400. During the war the wastage of doctors and the demand for their services at the Front led to a somewhat unnecessary alarm on the part of the public that the profession might become dangerously depleted, so that by the end of the war the entry approximated 2250, and for two or three years after that date even exceeded this number, the peak figure being 3420 in one year (1919). During the past five years the entry has stood round these figures: 1043, 1070, 1260, 1214, 1363. With the exaggerated entry following upon the war, the number of new practitioners registering each year has greatly exceeded the pre-war figures, so that in 1928 the number of medical men upon the Register was actually 10,000 more than in 1918, and 20,000 more than in 1898. It may be said shortly that the number of registered practitioners up to the end of the first quarter of the present century was almost exactly double the number 50 years ago, but the population of Great Britain and Ireland in that period has not increased by more than about 50 per cent., so that the increase of population has been very much less than the increase of medical practitioners has been, and the ratio of doctors to population is much higher than before.

Much of the increase has been absorbed by the rapidly increased demands of public health work, and there is considerable prospect of these demands increasing and not diminishing; but it is clear that the medical profession, if not actually overstocked at the present time, runs some risk of being so. However, the prospect of obtaining work after so prolonged a preparation for it may, at the present moment, be said to be on the whole favourable. Much discussion has taken place during the past year as to the position of medical women, whose entry during the war years was disproportionately large as compared with men. Evidence is somewhat conflicting, but my personal impression, founded upon reliable data, is that a far larger number of medical women are earning a sufficient livelihood by medicine than the pessimists allow.

Prospects.

Whatever may be the future of the medical student, there can, I think, be little question that his training is now so far-reaching, so catholic, and so well selected, that the student who receives a medical training is thereby fitted for his life's struggle in any direction, more completely than any other member of the community. The success of medical students who forsake medicine and undertake other pursuits or professions corroborates this statement. Indeed it may be said that the medical man of to-day has much the best general education of any member of the community, professional or otherwise, and the rôle of the priest in the Middle Ages, when the priest was the only educated person amongst his fellows, is becoming transferred to the doctor, with repercussions both upon the doctor and upon the public which are producing some curious effects at the present moment. The desire and the search for health have become greatly extended; a much wider proportion of the people are actively interested in these questions, and at the same time woefully ignorant upon them. The function of educating this eager public has been assumed largely, not by instructed members of the medical profession, but by irresponsible and mostly anonymous newspaper writers, and there is considerable demand for an alteration of this state of affairs, a demand which is still difficult to supply; this is a problem which many leaders of the medical profession are considering at the present moment.

State Control.

All the political portents go to show that there will be an ever-widening provision of State medical service, which now absorbs more than 17,000 members of our profession, and many observers think the time is approaching when all the medical services will be State-controlled. The body entrusted with the inspiration and guidance of medical education, the General Medical Council, has been subjected to severe and usually ill-informed criticism, and in response to a certain clamour, Parliament added two or three years ago a lay member to the composition of that Council, which, by the force of circumstances and not by design, had become restricted to professional men. The admirable choice was made of Sir E. Hilton Young, M.P., who recently told me that he has been very favourably impressed, perhaps rather contrary to his expectation, by the judicial wisdom, more especially in its much criticised disciplinary function of the General Medical Council. A comparison of the status of the medical profession before and after the foundation of the General Medical Council must convince any impartial observer of the enormous value of its services in the half century during which it has been in existence. A very beneficent and recent activity of the Council has been its insistence upon better training in preventive medicine, an aspect of that art which is becoming more and more valuable. With the increased competition brought about by the large increase in members of the profession, there has been an increasing demand for the possession of university degrees as distinct from qualifications of licensing bodies not enjoying university status. There are now 11 universities in England and Wales with fully developed medical faculties, and the University of London alone comprises in its medical faculty no less than 12 distinct and competing medical schools. Some 20 years ago the medical schools were able to persuade the University Grants Committee that medical education as a technical subject was eligible for block grants from the Exchequer, and these subventions have become one of the main elements in promoting the stability of the schools. Perhaps, naturally, the grant-giving bodies at first sought to eliminate what they deemed the weaker schools, especially in London, but notwithstanding considerable pressure to this end, all the 12 schools have survived, and the competition is all to the good in ensuring an increasing effort to improve the conditions of life and opportunities of training of medical students. It may, I think, be said with confidence that the London medical schools generally enjoy a higher reputation at the present time than in any other within living memory.

Littré's Definition.

Fifty years ago Littré, in his great dictionary, gave a definition of medicine which showed an uncanny foresight of its present developments. He described medicine as "the art which has for its purpose the preservation of health and the cure of disease, and which rests upon the study of the science of disease, or pathology." The preservation of health, which Littré thus placed first, rather than the cure of disease, has become the absorbing motive of medicine within the last few years, and the function of the doctor in promoting the preservation of health has made him perhaps the most valuable artificer of the fortunes of our present-day civilisation.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 12TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 131 (last week 97); scarlet fever, 3060; diphtheria, 1582; enteric fever, 104; pneumonia, 869; puerperal fever, 50; puerperal pyrexia, 115; cerebro-spinal fever, 7; acute poliomyelitis, 29; encephalitis lethargica, 18; dysentery, 7; ophthalmia neonatorum, 100. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Oct. 15th–16th was as follows:—Small-pox, 166 under treatment, 3 under observation (last week 141 and 4 respectively); scarlet fever, 2263; diphtheria, 2069; enteric fever, 39; measles, 166; whooping-cough, 157; puerperal fever 30 (plus 14 babies), encephalitis lethargica, 125; poliomyelitis, 6; "other diseases," 20. At St. Margaret's Hospital there were 23 babies (plus 13 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 6 (1) from enteric fever, 11 (2) from measles, 4 (1) from scarlet fever, 21 (3) from whooping-cough, 41(3) from diphtheria, 186 (49) from diarrhœa and enteritis under two years, and 29 (3) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa are on the wane, the highest figures being reported from Birmingham and Liverpool, each 14, Hull 13, Sunderland 8, Middlesbrough 6, while Glasgow, Dublin, and Belfast reported 9, 9, and 4 respectively. The deaths from enteric fever were reported from Brentford and Chiswick, Portsmouth, Huddersfield, Halifax, and Newcastle-on-Tyne, each 1.

The number of stillbirths notified during the week was 274 (corresponding to a rate of 42 per 1000 births), including 54 in London.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—On Monday, Nov. 4th, Princess Louise will lay the foundation stone of the first block of the new Queen Charlotte's Hospital in Hammersmith.

Harveian Oration

ENTITLED

CIRCUMSTANCES IN THE LIFE AND TIMES OF WILLIAM HARVEY.

Delivered before the Royal College of Physicians of London on Oct. 18th, 1929,

BY SIR WILMOT HERRINGHAM, K.C.M.G., C.B., M.D. OXF., HON. M.D. TRIN. COLL., DUB.,

FELLOW AND SOMETIME CENSOR OF THE COLLEGE; CONSULTING PHYSICIAN, ST. BARTHOLOMEW'S HOSPITAL; LATE VICE-CHANCELLOR, UNIVERSITY OF LONDON.

IN such a quest we look first into a man's own writings. Of Harvey's Discourses you have heard enough. They shed a certain light on his character, but hardly any on the events of his life. Such as it is, all is well known to you already. From private letters we expect more. But of the few of Harvey's letters which are preserved, several refer merely to anatomy and add nothing we did not know. One, it is true, that to Dorchester, better known as Sir Dudley Carleton, shows that, however careless Harvey may have been about business, he, at any rate, took care not to lose a good position when he had got it.

Lastly, there remain the letters to Lord Feilding, later the Earl of Denbigh, and a rather incompetent Parliamentary General. They are priceless, for they show Harvey in a new character as the discontented British tourist. He is perfectly true to the type. He is detained in quarantine at Treviso, and he is furious with the wooden stupidity of the officials who will not let him through, he is furious at the quarters in which they have housed him, and he is more furious still at their daring so to molest an English gentleman of no small importance.

The chief passages in Harvey's Life are well known. They have been collected by Sir D'Arcy Power, and Sir Thomas Barlow added an account of his University years. I may, however, give you a few which I do not remember to have seen mentioned.

In 1625 the Duke of Buckingham was accused of poisoning King James by a plaster applied to his arm. Harvey was examined before the House of Commons. He had been in attendance during the King's last illness, had been present when the plaster was applied, and did not know what it was made of, but he saw no ill-effects from it. He was one of a committee of this College which, in 1627, reported on some alum works in the parish of St. Botolph and condemned them as a nuisance.

In 1633, on June 23rd, when he was with King Charles for the coronation in Holyrood, he received the freedom of Edinburgh and was made a Guild brother at the banquet given to the King by the city.

In 1641 he went to Aberdeen, and on August 28th received the freedom of that city. This was the year in which Charles tried unsuccessfully to raise a Scotch force against Parliament. It was not, I think, known before that Harvey accompanied him on this occasion, as well as in 1639 and 1640.

In 1644 the King sent the Duke of Richmond and Lennox and the Earl of Southampton as Commissioners to treat for peace at Uxbridge with the Parliament. Harvey went in the suite of the Duke of Richmond and Lennox, with whom he had travelled in France 14 years before, and his friend Edmund Smith went thither also in the suite of the Earl of Southampton.

In November, 1646, he was given a pass from Oxford to Newcastle to attend the King as his physician. But he did not follow the King to Holmby House, nor do we find that he was ever again in attendance. Charles was never out of health, as we know from Sir Thomas Herbert, during the remainder of his life, and no physician was among the few servants who were allowed him.

In 1650 Harvey was given a pass to go to London to attend his old patient, Lady Thynne. She had to guarantee that he would take no steps prejudicial to the Commonwealth, but that was merely the usual precaution observed with anyone who had been with the late King.

David Lloyd, in his Memorials of certain persons who suffered during the Rebellion, published in 1668, states that Harvey was fined £2000 by Parliament.

THE FAMILY.

Harvey's next brother, John, was Sergeant or head of one of the departments in the Household, became on his resignation Receiver of Crown Lands in Lincolnshire, and died in 1645 Member for Sandwich. His executor was the younger Harbottle Grimston, one of the most respected of the Parliamentary party.

The five remaining brothers were all in trade. Two of them, and apparently only two, were in the Grocers' Company. Daniel was elected in 1611, when he was only 24, and was given a loan of £50 out of a benevolent fund founded by the Company to start young members in trade, and Eliab, was elected in 1616. Both held office, and Daniel was elected Sheriff and Warden, but paid the fine to escape service. Foreign trade was then in the hands of chartered companies. The chief exports were cloth, a trade as old as Charlemagne, lead and tin. The oldest was the Merchant Adventurers Company, which had the monopoly of the trade with the North Coast of Europe from the Elbe to the Scheldt. Their books are lost and we cannot therefore tell if the Harveys were in it. But there was a smaller company of Merchant Adventurers trading with France, of which Daniel and Matthew were certainly members.

In 1627 Charles, in one of the vagaries of his senseless foreign policy, confiscated some French ships. The French retaliated by confiscating British goods in France. This led to litigation, and Daniel and Matthew were accused before the Privy Council by their fellow Adventurers of acting in collusion with the French merchants. The matter seems to have dropped as no subsequent proceedings are recorded. The other two great companies were the Levant Company and the East India Company. The Harveys were in both.

It seems to have been a family characteristic to refuse to pay entrance fees. In 1616, Thomas and Daniel, partners and "Farmers of the pre-emption of Tynne," were admitted to the Levant Company. Thomas paid his "fine," as it was called, of £25, and this admitted the firm. Daniel was abroad. But when Thomas died in 1623, aged 38, Daniel, by the rules of the Company, became liable for a fine. Nothing would induce him to pay it, and the Company did not get it out of him till December, 1625. Eliab and Michael did not join till 1637, when the fine was £50. They also refused to pay, and haggled for months with the Company until they obtained an abatement. They repeated the process in the East India Company. Daniel was already a member in 1624. Eliab, Michael, and Matthew were elected in 1628. "The fine was left to their discretion though it was considered that they could not give less than £10 to the poor-box." They not only could, but did. At the next meeting "they took the accustomed oath, the court expecting from them some reasonable fine in that respect, but they presenting to the Court but £6, which, howbeit, they refused not, yet they wished that Daniel Harvey would acquaint his brothers that the Court expected they would have enlarged themselves in a more bountiful manner, for the favour conferred upon them is not usually permitted to any under £20 a man."

In 1633 there is a delicious bit of sharp practice by Daniel. When a ship came home the members bid for the cargo, and the payment was due some months later. The usual rate of interest was then 7 per cent., and Daniel moved that the Treasurer should be ordered to receive such moneys as he should bring in upon discount for pepper at 8 per cent., on the grounds that it was much better for the Company to

receive its own money at 8 per cent. than to borrow outside at 7 per cent. The Treasurer, however, took a different view and threatened to resign. It is not surprising to find that the Company supported him.

Clarendon, in his "Life," states that Daniel had the reputation of knowing more about trade than any man in England, and that Archbishop Laud, when he was made Commissioner of the Treasury in 1636, on the death of Weston, consulted him frequently. They were near neighbours, as the Archbishop had a house at Croydon and Daniel lived at Combe near by.

There is further evidence on the reluctance of the Harveys to part with money. When the Civil War broke out both Parliament and the King found themselves in great straits for money. Both, at first, raised it by voluntary contributions and the King never had much from any other source. Parliament, very early, began to exact contributions and their first essay was by the methods in vogue in former reigns. The levy of one-twentieth was ordered on all goods and movables. Under this Daniel Harvey was assessed in Dowgate ward. In April, 1643, he was ordered to pay £1500, but in November this was raised to £5000. The money was extracted from him with great difficulty. In May, 1644, he was imprisoned at Lambeth House. In August they threatened to deport him to Plymouth. By Dec. 20th he had paid £3000. In February, 1645, he is ordered to pay £500 more within a fortnight, and in July he was brought up before the Commissioners to answer objections against him. In 1650 he died, and in 1652 Eliab, his executor, made an affidavit that he had paid £4000, whereas his rightful share was only £1360, and his estate was thereupon credited with £3000 on the Public Faith—corresponding to our funds. Eliab was assessed at £2500. He absconded for a time. His goods at Roehampton were distrained but were bought up by his brother-in-law, Colonel Francis West, afterwards Lieutenant of the Tower for Parliament. Eventually he was brought up in custody and forced to pay up. The brothers were not alone. Many citizens behaved, and were dealt with, in the same way. Later, Parliament raised money by assessment on counties, also an old method, and great difficulty was always experienced in collecting it. The continual arrears in pay were what gave the Army its power, as it refused to be disbanded unless payment was made and no money was available for the purpose.

But the Harveys did not confine their operations to pepper and currants. In later life they dealt largely in land. Land was then easy to buy. All the royal lands, all the episcopal lands, and all the cathedral lands were up for sale. Parliament also dealt very hardly with the Royalists and only admitted them to composition for their property under heavy fines. A man with a rent roll of £1000 was usually fined £2000. As he had already spent all he had, and melted his plate for the king, and as there were then no other ways of investing money than in land, he could not pay his fine without selling some of his property. To sharp business men like the Harveys it was a great opportunity. They evidently acted together, for the brother who becomes the owner is often not the ostensible purchaser.

By the end of the first generation, therefore, the Harveys, including William, had become large landowners. Matthew, who died in 1642, owned land in Kent and Surrey, Michael's sons had a Dorsetshire estate worth £21,000, Daniel had Combe and property in the Midlands and elsewhere, and left his widow £1200 a year besides, and Eliab had Roehampton and Chigwell and a house in Broad-street, besides other properties, and left also £1500 a year to his widow.

Only two of the branches lasted long. William, John, and Matthew had no children. The Michael branch died out in 1712. Thomas's only son, known as John Harvey of Antwerp, I have been unable to trace.

Young Daniel married into the Montagu family which took a leading part in bringing back Charles II. He obtained with his wife Combe Neville, an estate adjoining Richmond Park, was a member of the Convention Parliament of 1660 which voted the Restoration, was knighted by Charles the first day he landed, along with young Eliab, his cousin, and obtained a grant of arms which, up to that time, the family did not possess. He was a courtier, was made Ranger of Richmond Park, was a friend of the notorious Castlemaines, and died as Ambassador at Constantinople in 1672. His son Edward, of Combe Neville, was a Jacobite and wasted his fortune. In 1750 Edward's surviving son sold the property. Daniel's sisters married well. Elizabeth married Heneage Finch, an honest man and an excellent lawyer, who became Lord Chancellor and Earl of Nottingham. Mary married Sir Edward Dering, of Surrenden Dering, and Sarah married an Irish peer, Lord Bulkley.

Young Eliab remained in business, and in 1672 was proposed, though not elected, for Governor of the Levant Company. He had a great house in Broad-street which just escaped the Great Fire, and was made keeper of the King's game in Epping Forest where one of his properties, Chigwell, was.

He was succeeded by a long line of Williams and Eliabs, who were country gentlemen and M.P.'s—in the Parliament of 1678 there were no less than four members of the family—with occasional soldiers. The last of the line was a distinguished sailor, Sir Eliab, who, when a midshipman, nearly lost the property at the gaming table, commanded the *Temeraire* at Trafalgar, and in 1809 was cashiered for insulting his admiral, Lord Gambier, who had promoted Cochrane over his head. He was restored however, the following year and died in 1830, G.C.B. and Admiral of the Blue. He left no son and, through one of his daughters, Rolls Park at Chigwell descended to the late Sir Francis Lloyd, whose widow still lives there.

The Times—School and University.

Let us now consider some of the conditions of Harvey's own life. He was brought up at the Cathedral School of Canterbury, one of the best in the country. At that date Latin was the universal language. It was the language of learned men, the language of diplomacy and of travel. Every bachelor of divinity had to preach in Latin, the young barristers used it in their moots in the Inns of Court, the accounts of the Royal household and even some of the merchants' accounts were kept in it. Accordingly it was the aim of every good school to make its boys not only able to read, but able to speak Latin, and in the statutes of Canterbury dated 1541 it is ordered that the boys, whether at work or play, should speak nothing but Latin and Greek, but Greek was rarely taught in schools. You may remember that Montaigne, who lived about that time, was not allowed to speak any language but Latin until he was six. Greek was brought into the schools by the Calvinists who returned to England on the accession of Elizabeth. For them Greek and Hebrew were the two sacred languages, and for the study of the Bible Greek became common in the schools and even Hebrew was sometimes taught.

We may therefore confidently suppose that Harvey went to Cambridge able not only to read, but also to speak Latin after a fashion, and with some knowledge of Greek. The old free University had given place to a system of Colleges and Halls founded to train priests by pious benefactors, of whom the greatest, though not the first, was my own founder, William of Wykeham. The life was hard and the teaching narrow. Into these ecclesiastical seminaries the classic revival of the fifteenth century in Italy, patronised by Humphrey Duke of Gloucester, and other great men, brought a fresh inspiration. At Oxford, Linacre and Grocyn were as good Grecians as any in Europe. Wolsey and Fox and Henry VIII. all encouraged and endowed Classical studies. But the Classic

nd especially Greek, were attacked for their Paganism oth by the old religion and the new. In Oxford, reek soon fell into contempt. At Cambridge, under heke and Smith, it held better. By Harvey's time was re-established. Spenser, who went up in 1570, as a Platonist, and Harvey was devoted to Aristotle.

But meanwhile the universities had fallen on vil times. The Church had been plundered by the rown and also by its own patrons, both lay and cclesiastic. Spenser, in Mother Hubberd's Tale, escribes the lay patron bargaining with an unfor- nate clergyman, before he would present him to a 40 living, that he should resign half the income to he squire's son. The case of Wokingham was eported to the Long Parliament. It was in the ift of Salisbury. The Dean and Chapter had leased he rectory and tithes to a layman, there was no icarage, and the parishioners had, for many years, o pay a preacher out of their own pockets. The pper clergy were Pluralists. One man might hold everal benefices. The lower clergy were accordingly alf starved, and as a natural consequence were rossly ignorant, careless of their duties, and some- imes drunken and corrupt. Scandalous benefices eget scandalous ministers. It was this state of hings that gave the Calvinist attack such strength. The Church fell as much by its own faults as by the irtues of the Calvinists.

The absence of decent prospects in the ministry ed to a great falling off in the number of students. dded to this the destruction of the monasteries ad deprived the universities of the large numbers f scholars whom they sent up with exhibitions. n the middle of the sixteenth century the numbers ad fallen to a few hundreds, nearly all the halls ere closed, and the colleges were half empty. urther, the ecclesiastical character of the univer- ties laid them open to interference by the Head of he Church, now the Monarch. By voting for the ivorce they had placated Henry VIII. But under dward VI. all the heads and professors who sym- athised with the old religion were expelled. Under lary the process was renewed in the opposite direc- ion. Eleven heads were expelled in Cambridge lone. Under Elizabeth the Act of Supremacy was nforced, with a similar expulsion of all Romanists, nd the universities became violently Calvinist.

In 1573 the Vice-Chancellor of Cambridge and two ther leading Dons broke into Caius College and estroyed all the decorations with which Caius, who as a High Churchman, if not a Papist, had beautified he Chapel. In 1595 Whitgift, the Archbishop of anterbury, and a synod of bishops drew up the ambeth Articles, of which the following are pecimens:—

1. God, from all Eternity, hath predestined certain men nto life; certain men He hath reprobated.
2. The moving cause of Predestination unto Life is not aith or Good Works or "anything that is in the person redestinated," but only the Goodwill and Pleasure of God.
3. There is predetermined a certain number of the Pre- stinate, which can neither be augmented nor diminished.
4. Those who are not predestinated to salvation shall be ecessarily damned for their sins.

* * * *

7. Saving Grace is not given . . . . to all men by which ney may be saved if they will.
8. No man can come unto Christ unless the Father shall raw him; and all men are not drawn by the Father.
9. It is not in the will or power of everyone to be saved.

This cheerful view of the future was, however, too uch for Elizabeth. She sent for her little black usband, as she called Whitgift, and, after giving m what, in those days, was called a rattling, told m to withdraw the Articles altogether, which he id to do. James, who loathed the Scotch Calvinists, rew all his weight on the same side. In 1611 Laud, ho, in spite of the violent opposition of the two bbots, George the Archbishop and Robert, Master Balliol, had led a growing High Church party in xford, was elected President of St. John's, and by 22 Oxford had become anti-Calvinist. Cambridge llowed suit, though considerably later.

Meanwhile, however, a great change had taken place in the material circumstances of the universities. Elizabeth, who loved to air her accomplishments, began the system of Royal visits to the universities with all their solemn puerilities, which was continued by James and Charles. She made the universities fashionable. Donations were made by her courtiers, and the numbers rose, at the end of her reign, to 2500 at Oxford and nearly as many at Cambridge. Venn says that 1590 to 1640 was the zenith of the universities until quite recent times. The result was not an unmixed blessing. The rich youth who now flocked in brought with them the manners of the Court, and for many years the Statute books are full of decrees against extravagance in dress, drunken- ness, gambling, insubordination, and such unseemly sports as football. An undergraduate twice con- victed was to be whipped. Simmons D'Ewes could find no fit associates in 1618 but a few Dons.

All this had, however, little effect upon the poorer students. Their life continued as hard and scanty as it was before. Harvey went to Caius with a Matthew Parker scholarship. The capital endowment of it was £61 13*s.* 4*d.* Elizabeth, in 1559, made an injunction that all clergy whose benefices were worth £100 or more should, for every £100 of their income, contribute £3 6*s.* 8*d.* as an exhibition for a scholar at the universities. Under James existing professorships received additional revenue, among which the Chair of Physic at Oxford was augmented by the Mastership of Ewelme Hospital, and fresh chairs were set up in Mathematics, in Natural and in Moral Philosophy, and in Anatomy. All these at Oxford. Similar improvements, no doubt, took place at Cambridge.

During the Rebellion both Universities were at first Royalist, for Cambridge was preparing to send its plate when it was prevented by Cromwell, but Scarborough was expelled from Caius for his loyalty, and the University had by this time been overpowered by the Parliament. Oxford was loyalist throughout, and after the King's death refused to take the oath prescribed by Parliament, for which it was punished by a visitation under Philip, Earl of Montgomery and Pembroke, the Chancellor who succeeded Hertford. On his death in 1650 Cromwell became Chancellor, and under his tolerant rule Oxford had comparative rest.

Of Harvey's feeling to Cambridge we know nothing. He is not known to have returned there after taking his degree, though, as he was at Newmarket in 1636 attending the young Elector, it is possible he was present at some ceremony.

The Sciences: Medicine.

To understand the England of Harvey we must imagine a society to which science was unknown. To us the growth of knowledge by observation and experiment is a common-place. Every morning we read the discussions of some scientific conference or are informed of a new discovery. In Harvey's time the few sciences that existed were little removed from magic, and the great majority, including all the biological sciences from botany to sociology, did not exist at all. Alone in the great mind of Bacon had the real meaning of science been grasped, and the immensity of its future conceived. Men still ascribed the action of the brain and liver to spirits, and the causes of disease to disordered humours. Not only had they not yet comprehended that such operations could be examined by physical methods, but they resented as heresy little less than criminal all attempts to correct the mistakes and supplement the deficiencies of great predecessors such as Galen, which would have been welcomed by no one more warmly than by Galen himself.

Chaucer does not give a very good character to his Doctour of Physicke.

> "In all the world ne was ther non him lyk
> To speak of physik and of surgerye
> For he was grounded in astronomye,"

and therefore could tell his patients' prospects by the stars.

> "He knew the cause of every maladye
> Were it of cold or hete or moist or drye
> And where they engendrid, and of what humour;
> He was a very parfight practisour."

Then he describes his understanding with his apothecaries.

> "For eche of hem made other for to wynne
> Here friendship was not newe to beginne."

Then he describes a list of the old authors that he knew, and goes on to describe his rich dress.

> "And yit he was not esy in dispence,
> He kepte that he won in pestilence,
> For gold in phisik is a cordial
> Therefore he lovede gold in special."

Bacon, in his "Advancement of Learning," published in 1604, the year that Harvey took his degree, describes with great shrewdness the difficulties of medical practice, and sums up:—

> "So then the subject being so variable hath made the art by consequence more conjectural, and the art being conjectural hath made so much the more place to be left for imposture.
>
> "And therefore I cannot much blame physicians that they use commonly to intend some other art or practice which they fancy more than their profession. For you shall have of them antiquaries, poets, humanists, statesmen, merchants, divines, and in every of these better seen than in their profession; and no doubt upon this ground, that they find mediocrity and excellence in their art maketh no difference in profit or reputation towards their fortunes.
>
> "Medicine is a science which hath been, as we said, more professed than laboured, and yet more laboured than advanced,"

and the reasons that he gives are "the discontinuance of the ancient and serious diligence of Hippocrates" in taking notes of cases, the neglect of morbid anatomy, and the absence of exact inquiry into the effect of drugs.

In Bacon's own lifetime two men, Mayerne and Harvey, partly, we may think, owing to Bacon's criticism, and partly, no doubt, because they shared in the scientific spirit that was just beginning to awake, worked exactly as Bacon advised. We have Mayerne's clinical and post mortem notes in his own beautiful handwriting here in the Library. Harvey's, to which he himself alludes, are unfortunately lost, but he had them in 1648 when the letters to Riolan were published, and it is possible they may yet be found. They revived the old Hippocratic tradition, and they were followed, after the Restoration, by Willis, Lower, Glisson, and Sydenham.

It is difficult to judge exactly what Harvey's position was in the general estimation. He attended Bacon himself, and also his successor, Lord Keeper Williams, Bishop of Lincoln, and the latter's biographer, Bishop Hacket, tells how "that great secretary of nature, Dr. William Harvey," saved William's life in what seems to have been a dangerous attack of enteric in 1624. We know the names of other patients, Sir Thomas Thynne and Sir Thomas Sandys, from certificates that he gives of their unfitness to travel. He also attended the Lord Treasurer Weston who was laid up with an attack of the stone at York during Charles' expedition to Scotland in 1633. He says he lost practice by publishing the De Motu, but he must have regained it when he was made Physician to the Household. He practised medicine, surgery, and, it seems by his notes in the De Generatione, diseases of women especially.

The title of Medicus Regius, meaning Physician to either James or Charles or their Queens, was held by no less than 16 men besides Harvey. Five of them were knighted, which Harvey was not. Sir Matthew Lister was Physician to Henrietta Maria, and when she was confined at Exeter in 1644, he and Mayerne went down to see her. But the great man of the time was Sir Theodore Turquet de Mayerne. In 1644, the Queen, writing to him, signs herself "votre bien bonne maitresse et amie," and Charles writes "Mayerne, Pour l'amour de Dieu, allez trouver ma femme."

On May 19th, 1645, he was paid the greatest compliment that Parliament has ever, I suppose, paid to a medical man. The Lords sent down a message to the Commons:—

> "The Lords desire that the House of Commons would join with them in expressing their esteem of a man whose extraordinary abilities would make him welcome in any part of Christendom; and as he is singular for his knowledge in his profession, so he may be singular in being by the favour of the House exempted from all payments which others are subject unto: it being but a continuation of that favour which he hath enjoyed for about 30 years without interruption."

The House of Commons agreed by 69 to 66.

Other Sciences.

The other sciences in Harvey's time were as little advanced as medicine. Chemistry was first studied seriously by Robert Boyle at the end of Harvey's life; physics had produced in 1600 the book of Gilbert, President of the College that year, on the Lodestone, a work of the first class of which parts are still standard. Napier had in 1614 invented logarithms. But the science which advanced most rapidly in Harvey's life was astronomy. Galileo was lecturing in Padua when he was there, Kepler died in 1630, and in 1637 a poor Lancashire clergyman named Horrocks with borrowed lenses observed for the first time the transit of Venus. It has been questioned whether Harvey attended Galileo's lectures. As Galileo drew enormous audiences it is almost certain that he did, but if so they seem to have made but small impression for his references to astronomy are merely to disparage its methods in comparison with the direct observation of anatomy.

There was, however, a good deal of amateur experiment and invention. Prince Rupert dabbled in chemistry, the Marquis of Worcester had set up at Raglan Castle hydraulic machinery which frightened the Parliamentary Commissioners out of their wits, and Petty patented his first invention in 1647. There was also a small group of men who sought relief from the troubles of the times in the study of natural philosophy. They met in London up to 1648 and latterly at Gresham College, which Hobbes says had absorbed the natural sciences from the universities, but as in that year it was used as a barracks they transferred their meetings to Oxford. Harvey was at Oxford when they met in London, and when they met at Oxford he had already left it. He never therefore formed one of the group, which was the nucleus of the Royal Society. Even so it is rather curious that Sprat's "History of the Royal Society" (published in 1667) makes no mention of Harvey as a precursor.

In striking contrast to the infantile condition of science was the maturity of art and literature.

The Arts.

In Harvey's time there was a great enthusiasm for painting and sculpture. Charles is said to have had the finest collection of pictures in Europe. Arundel was second only to the King. Denbigh also collected. But they were not alone. Buckingham and many others were collectors, and it was not confined to court circles. Colonel Hutchinson was a good judge and Mrs. Cromwell had a collection of portraits. There was no native school, though Dobson painted good portraits, but the seventeenth century was the age of the Dutch, Flemish, and Spanish schools, and collectors can seldom have had such chances. Vandyck lived for several years at different times in England and Rubens was sent over as ambassador.

Harvey was undoubtedly interested in painting, for Arundel gave him a commission to buy for the King in Italy, and when he escaped from quarantine he travelled to Florence and Rome under the guidance of Mr. Petty, a clergyman who collected in Italy and the Near East for Arundel. By his introductions he was very courteously treated by the Grand Duke of Tuscany, who was a scientific man, and by Cardinal

Barberini at Rome, but he was an amateur at buying and failed to get anything of value.

Another art that was universally cultivated then was music. From 1590 to 1640 English music was at its zenith. The Puritans stopped ecclesiastical music, but rather because it was favoured by the bishops than that they themselves objected to it. There was a good deal of destruction of organs and church instruments at the hands of the soldiers. But it was not widespread, and the Puritans themselves sang psalms. Secular music was never thought wrong by anyone, and it is quite untrue to say that the Puritans set their faces against it. Bunyan, Milton, Cromwell, and Colonel Hutchinson were all devoted to music, and Colonel Hutchinson to dancing also, yet no one was a stricter Puritan than he. Cromwell was the first man who provided a Court Concert as an entertainment for his friends. His Ambassador to Sweden, Whitelock, took musicians with him, and was himself a performer. In fact in those days it was a regular part of a gentleman's education, whatever his religion or his politics. One of the best composers of song music was Henry Lawes, to whom Milton writes an Ode, and he, in 1655, published a collection of Ayres, dedicated to Lady Dering, who composed three of the pieces in it. This is Daniel Harvey's daughter. Mrs. Hutchinson also composed. In the ten years 1650 to 1659 there are 34 publications of musical works.

But of course nothing equals in significance the fact that Harvey's life was practically conterminous with what we term Elizabethan literature, the greatest outburst of literary genius that the world has ever seen. The first three books of the "Faerie Queene" were published when Harvey was 11 years old, and Herrick's "Hesperides" in 1648, when he was 70, and between those dates lie all the greatest names in English literature.

I have wondered whether, in their early married life, Dr. and Mrs. Harvey took a boat across to Bankside, where Shakespeare's plays were being given at the Globe up to 1613. I have wondered, too, what Harvey thought of the "Religio Medici" which was circulating in MS. in 1636 and what he would have said to Browne if they had met. We know Browne's opinion of the "De Motu." In recommending it to his son Edward and another doctor called Power, he speaks of it as a greater discovery than that of Columbus.

Harvey quotes Virgil and Terence, but he gives no sign that he had ever read or heard of the great writers of his own day. But a writer on scientific subjects can hardly be expected to quote contemporary poetry. Tennyson's "In Memoriam" shows that Tennyson had read Darwin, but I do not remember that Darwin quotes Tennyson. It does not seem a habit of great men of science to quote poetry. We need not, therefore, suppose that Harvey's silence means that he was without knowledge of the wonderful art around him; on the contrary, we know that he mixed with men who held it in the highest honour. Charles kept a Shakespeare in his bedroom. But in the first half of the seventeenth century the interest of most men was turned not to literature, nor to painting, nor to science, but to two subjects, which of all others are the most inimical to the cultivation of science or of art, politics and religion.

Politics.

The chief social change in the sixteenth century was the rise in wealth and influence of the upper middle class, including the squires in the country and the merchants in the towns. Both were of the same stock, for younger sons went into trade, and merchants who succeeded bought land. Some families combined both. The Barnardistons were an old Suffolk family in 1600, and are there still. The head of the family in Charles's reign, Sir Nathaniel, was Governor of the Levant Company and a prominent Member of the Long Parliament. The squires profited by the ruin, in the Wars of the Roses, of the old nobility whose estates they bought, and also by grants and cheap leases of the Abbey lands under Henry VIII.; both they and the merchants, by the great increase of the cloth trade which began under Edward IV., increased under Henry VII., and continued with fluctuations throughout the century. It led to a great demand for sheep pasture, and this in turn to a fourfold rise in rents, as related by Latimer, and to a large reduction of arable land to pasture, as described in the Utopia. But this again threw so many labourers out of work that Elizabeth was obliged to pass a new poor-law to save them from starvation. The House of Commons was practically filled by the squires, the merchants, and the lawyers who sprang from both.

The Tudors, the ablest and the only native dynasty we have ever had, knew the House of Commons thoroughly, and except in matters of religion, managed them with great tact. But Elizabeth, with all her prestige and popularity, so clearly recognised their reluctance to grant money that she practised the most sordid parsimony, suffered her great public servants to die in poverty, and poisoned the soldiers and sailors who saved England with bad victuals sooner than ask for supplies.

James, coming as a foreigner from a country where the middle classes had no power, and ignorant of our great political struggles in past centuries, was as entirely unable to recognise the position of the Commons as he was personally incapable of dealing with them. His silly profusion brought him rapidly to poverty, and he presented the ironic spectacle of a King blustering about his sovereign power and in the same breath begging for money to pay his tradesmen. No wonder that the Commons lost their loyalty to the Crown. In 1621 James tore out of the Commons' Journals the dignified declaration in which they stated their rights and liberties, and in 1625 he died at the end of the negotiations for the Spanish match, an enterprise begun with the usual Stuart disregard of the national feeling, pursued with the usual Stuart duplicity, and ending in the usual Stuart ill-success.

For Charles there was less excuse. He had taken a prominent part in politics for some years before his accession and had abundant opportunity to learn. But if a man cannot learn by experience, wherewithal can he be instructed? He was, in his first years, dominated by his evil genius, Buckingham, and though the Commons undoubtedly treated him very badly at that time, yet surely no man could have treated them with less tact than Charles. A Venetian wrote of him: "This King is so framed by Constitution that he can never oblige any man by word or deed." When he finally decided to govern without Parliament, his arbitrary measures, if not against the letter of the law—and it must be remembered that he had the warrant of most of his judges for what he did—were so completely against the spirit both of the Constitution and of the Petition of Right, which he had recently signed, that he irretrievably alienated both Parliament and the country.

Moreover, both parties, the King and the Commons, were equally justified in distrusting each other. If the Commons had good cause to distrust Charles, and they certainly had, Charles had equally good grounds to distrust them. Faction ran high; what was voted on Monday was rescinded on Tuesday, and at the end the majority who wished to continue negotiations were expelled from the House by the Minority and the Army.

In my young days small boys were occasionally puzzled by the question "What happens when an irresistible force comes against an immovable post?" It not inaptly represents the positions of the Parliament and the King.

Religion.

But the desire for political liberty had small influence compared to the violence of religious fanaticism. Religious grievances were invariably placed first in all the transactions of the House of

Commons. Henry VIII., to gratify his own passions, had led the nation to revolt from the Pope. But beyond a change of supremacy the religious practice of England was, for many years, little altered. Gradually, however, and more rapidly after the Marian persecution, Calvinism spread over the whole of England and Scotland. The City of London and the universities were its chief strongholds.

It is difficult for us to understand its appeal. Probably few Fellows of the College have laboured under the conviction of original sin and the certainty of damnation which clouded Cromwell's early manhood, or have experienced the assurance of saving grace which was his comfort and support in later life. But we can imagine how men, accustomed to the lax religion of the time, administered by an ignorant and careless clergy, for such they were, must have been affected by the greatest Revival that has ever taken place, to which Wesley and the Salvation Army are but ripples on a pond to a storm in the ocean, and what, to men living under the formalism of Rome, must have seemed the splendour of Calvin's great announcement that the creature could commune with the Creator, that the individual soul could approach the Divinity, that there was no barrier between God and man. Men's minds are naturally fascinated by horrors. Gloomy creeds have created the fiercest enthusiasm, and the Independents, the logical sons of Calvin, though he would have been the first to disown them, formed the most remarkable army that England has ever raised.

But if we find it hard to understand the acceptance of Calvinism, still harder is it to comprehend a society in which toleration was not only not approved, but was even abhorred as treachery to God. The Puritans were mocked as saints, but they spoke of themselves by the same term, and it was not always undeserved. Some of them were as truly saints as any that religion ever had. But even such men hated their opponents with a violence we can hardly believe, and had no thought of allowing them any kind of toleration. Calvinist, Arminian, Anglican, Independent and Papist, each was convinced that his own opinion was the true, and each was determined that it should be enforced on every man, woman, and child in the country.

Posterity has undoubtedly approved the political aims of the Long Parliament and looks upon it rightly as the preserver of English liberty. We are, therefore, the more astonished to observe the complete dearth of constructive political ability which marks their ranks. They pulled down everything; they built nothing. The Calvinists destroyed the Church, the Independents destroyed the Commons, the Lords and the Monarchy, and they themselves, when they turned out the Rump and set up the Protectorate, were attacked by the Republicans and Fifth Monarchy men, who plotted the assassination of Cromwell.

Compare what Cromwell, honestly anxious to restore good Government, could do for England in the years of his power, with the complete system of administration, religious, educational, judicial, municipal and financial, which Napoleon established between 1800 and 1811; or if you like a modern instance, with the system of government established in Italy since the war. It may be that when Mussolini dies the edifice will fall, but see what force and what creative imagination he has displayed.

The Government under the Commonwealth is, in England, a long series of failures, and in Ireland one of the greatest political crimes on record. Charles lost his cause, luckily for us. But in the personal struggle he was the victor. He had more foresight than any of them. He always believed that the rebellion would break down and the monarchy be restored, if not in his time, then in his son's. Accordingly he resisted to the utmost, and by so doing forced his foes into such violent and illegal courses as completely lost them the sympathy of the nation. After his execution they never dared to summon a freely elected Parliament, they were driven to acts of great and greater despotism, and when the strong hand of Cromwell was removed they perished by their own dissensions and by the universal detestation that their tyranny had evoked.

But if posterity has approved the political aims of the Long Parliament, it has condemned their religious purposes no less emphatically. The views which Laud held about the Anglican Church are those now held by its members, the clergy now are as Laud would have had them, and the services are such as Laud wished and would have aroused Elliot to fury. But these are small matters.

The great vice of the age was its intolerance, and the religious mania, for we can call it nothing else, which overran England between 1560 and 1660 like an epidemic, did not even, like bodily epidemics, leave a population behind it immune to its particular poison. Never was religious hatred more bitter than after the Restoration, and in its graver forms it persisted for over a century and a half. Catholic emancipation was not carried till 1829, Oxford and Cambridge were not thrown open till 1871, and mutual respect and goodwill between the Free and the Established Churches is a growth of the last 30 or 40 years.

It has been claimed that the Puritans preserved the family life of England from the corruption and the licentiousness of Court manners. Such statements assume, on the one hand, that the Court society of the day was something exceptional, and on the other that the manners of the capital were the manners of the country. Neither is true. The fashionable London society of that day, as of this, was composed of people in affluent circumstances, occupied chiefly with their own pleasures and their own selfish interests, with leisure and without, for the most part, serious occupation. Can you suppose that such a society could exist, have you ever known such a society to exist either in London or any other capital against which the accusation of vice and folly could not be brought? There was nothing exceptionally wicked in society then. There were some scandals—the Somerset and the Purbeck stories, for instance, there were drunkards and profligates, there were family quarrels—when Lady Hatton asked James to dinner he suggested it might be a good occasion to make up her quarrel with her second husband, Sir Edward Coke; she said if her husband came in at one door she would go out at the other. But in all these points was society then very different from the present, and could we not from the law reports parallel every one of them over and over again at the present day?

Charles himself was too uxorious, and at a time when old Lady Arundel and young Lady Derby, when the elder Lady Verney, whom her husband always called "Good Puss," and the younger Lady Verney, whom the whole family nicknamed "Mischief," when Mrs. Hutchinson and Lady Wandesford and Lady Fanshawe, and, above all, Dorothy Osborne, were alive, and when the stage was trodden by those exquisite types of English girlhood whom we could match to-day, Portia, Rosalind, and Celia, Beatrice, Imogen, and Miranda—do you think that there can have been much amiss with the position of women?

It is said too that to the Puritans we owe that sturdiness which has kept and increased the liberty they won. Neither is this to be accepted. Lived there no brave men before Agamemnon? Did not the men of that day expressly proclaim themselves followers in their fathers' footsteps, guardians of what they had obtained by peril of their lives? The temper of a great nation is a thing too firmly set to change under every blast of new doctrine, and its history is the consequence of its character, not the cause of it.

The Puritans were the guardians of spiritual fervour at a season when religion had become cold and dead. Such seasons of decay occur from time to time, and the Puritans are neither the first nor the last of the Revivalists. Whenever need arises such men have a great part cast for them on the world's theatre, and none of us should criticise them

so harshly as to refuse them their due praise. But we owe to them the loss of half the beauty of England. They destroyed the drama, they sold the finest collection of pictures in Europe, and even ordered the religious pictures to be burnt as superstitious, there is not a village church which does not bear the marks of their barbarous hands, and three several times it was proposed in Parliament to pull down the Cathedrals and sell the materials for what they would fetch.

But, after all, our interest is not to praise or blame the actors in this great tragedy. It is to consider what was Harvey's attitude to the great struggles, political and religious, that were taking place around him. And of this we obtain from himself no evidence whatever. He mentions the King and Queen two or three times in the "De Generatione," but without any word either of affection or regret, which indeed in 1651 it might not have been prudent to print. He mentions Parliament once, complaining that the mob had destroyed his collections, though he was attending the King with the permission, and even at the command, of Parliament. There remains only the message that he is said to have sent to Scarborough, who was an ardent royalist, "Leave thy gunning and come here and I will bring thee into practice." But that may be significant.

We may well believe that he would not approve either the folly and tyranny of Charles or the violence and malice of his foes. To Harvey the war must have seemed a vast catastrophe, for which both parties were alike responsible, from which little good was gained, and by which the progress of knowledge was irreparably hindered.

And for religion. No man of serious character then doubted the fundamental beliefs of Christianity, and Harvey was of a reverent mind. But we cannot fancy his sympathising either with Laud's formal discipline or with the brutal irreverence of the Puritans. Harvey's religious feelings, we may be sure, were too sincere and too deeply felt ever to be published to the world.

Addison once asked Garth of what religion he was. Garth replied, "Wise men all hold the same religion." "What is that?" said Addison, and Garth answered, "Wise men never tell."

A STUDY OF THE EFFECT OF RADIANT HEAT ON THE PRODUCTION OF ACTINIC ERYTHEMA.

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An investigation into the effect of radiant heat on the production of actinic erythema was started in May, 1928, and was carried out at first in the actino-therapeutic department of the Royal Free Hospital and later, when laboratory conditions became essential, in the physics department of the London School of Medicine for Women.

The possible interaction of shorter and longer wave-lengths is of some practical and clinical importance. Infra-red radiations constitute a large proportion of the energy given out by all sources of ultra-violet light, the association of radiant heat with mercury-vapour light treatment has been advocated and incandescent filaments are used as resistance units in some types of mercury-vapour lamps. Moreover, it may be presumed that clinical differences in the therapeutic value of mercury-vapour and carbon arc lamps depend partly on different percentages of the various wave-lengths in these sources of ultra-violet energy.

No attempt has been made in this preliminary investigation to estimate the therapeutic value of combining long and short wave radiation. The effect of the rays on the production of actinic erythema was alone investigated. It was hoped that a study of the skin reaction might give some indication which would prove to be of clinical value.

The following references to the more important contributions on the subject indicate the divergent opinions held by various observers. Thedering,[1] in 1916, stated that, in the treatment of one patient, red and infra-red light immediately after an erythema dose of ultra-violet light diminished the intensity and duration of the cutaneous reaction. Benoit,[2] in 1923 and 1926, stated that the addition of infra-red to ultra-violet light diminishes the cutaneous reaction. Infra-red preceding ultra-violet irradiation will increase the reaction, and following it will produce a local clearing of the erythema. Peemoller[3] quotes a case where erythema was obtained after three minutes exposure to mercury-vapour light and radiant heat, and after four minutes to mercury vapour alone. He considers that all hyperæmia-producing skin irritation is capable of increasing the action of the erythema-producing ultra-violet rays. Stahl and Simsch[4] state that skin hyperæmia caused by the heat of a summer's day increases erythema and pigmentation; friction of the skin after a cold bath has the same result. Anæmia of the skin produced by a short cold bath decreases erythema and increases pigmentation. The same action is produced by a cool wind. This view is commonly found in German publications, where the reinforcing action of infra-red rays is generally taken for granted. Pech[5] insists on the antagonistic action of infra-red and ultra-violet radiation. He states that the addition of infra-red rays to ultra-violet light will necessitate a longer exposure for the production of an actinic erythema. Dufestel[6] considers that in practical actinotherapy the weak antagonistic action of infra-red rays can be neglected. Radiant heat in small doses increases the reaction, whereas radiant heat in larger doses, given for an hour to an hour and a half after mercury-vapour irradiation, decreases the reaction. Hill and Eidinow,[7] using a mercury-vapour lamp, obtained an erythema after ten minutes irradiation at ordinary room temperatures; this was intensified if the exposure was made in a hot room and reduced to almost nothing if made in a cold room at freezing temperature. They consider that cold retards, but cannot stop, the biological action of ultra-violet rays.

Fuller lists of references can be found in A. C. Guillaume's "Les Radiations Lumineuses," Paris, 1927, and Dufestel's "Ultra-violets et chaleur radiante," but the above quotations may suffice to show how various are the views of different observers.

We consider that experiments with the data and precautions mentioned below are necessary for obtaining reliable results.

Experimental Details.

The aim of our experiments was to ascertain whether the addition of "radiant heat" rays had any appreciable effect, either synergic or antagonistic, on the production of actinic erythema, and whether, if any such effect be noted, it can be attributed to some "physiological" action or "physical" cause.

The lamps used as sources of ultra-violet radiation were: a Finsen-Reyn carbon arc (15–18 A, 70–80 V) lamp, a vertical carbon arc (15–18 A, 55–60 V), a smaller vertical carbon arc (7 A, 35–40 V), a Kromayer mercury-vapour lamp (3 A type), and a mercury-vapour lamp of the Hanovia type, without reflector (2 A, 145 V). For convenience in the text we use the term "ultra-violet" light for the radiation given out by these lamps, recognising that visible and infra-red rays are also present.

The source of "infra-red" or "heat" or "long-wave" radiation used was the resistance element from a "bowl-type" electric heater at red heat. The radiation given out

is mainly in the infra-red region (maximum energy in the third octave of the infra-red, about 36,000 A.U.).

The filters used were two cells, 1 and 4 cm. deep respectively, with flat quartz faces. Through these cells fresh distilled water circulated; water absorbs rays beyond the first octave of the infra-red, thus cutting off a great portion of the longer rays.

We considered it necessary to make exposures on a part of the body not usually exposed to light—the thigh or abdomen—and each reaction was tested against a control, made on a corresponding symmetrical area of skin on the other side of the body. Re-exposure of the same areas during later experiments was carefully avoided.

Statements comparing erythema are usually based on the differences observed on the following day—i.e., about 24 hours after exposure. From previous clinical observations the impression had already been gained that two erythemas of varying depth may, after 24 hours, be indistinguishable; that the rate of fading of symmetrical parts does not always run a parallel course, and that the illumination (natural or artificial) in which the erythema is viewed plays a rôle in the appreciation of its intensity. Other accidental factors, such as baths, friction from clothes, and warming or cooling also make the comparison of fading erythemas difficult, as the effect on two observed parts is not always identical. Hence frequent observations during the first few hours were considered essential. It is also desirable when comparing the relative intensity of two reactions to observe them when they are at their maximum. With the depths of erythema obtained, pigment formation was not sufficiently marked to be used for purposes of comparison and is therefore not recorded, though it was observed in some cases. Differences in colour of the pigment of the heated and non-heated areas were noticed, the latter being greyer and less brown.

We have recorded experiments made on medical students and ourselves, noting the latent period (time elapsing before the appearance of visible erythema), rate of increase of erythema, maximum reaction (colour and depth), duration and rate of fading. Rigid clamped screens of asbestos, with diaphragms for exposure of the skin, were employed. Two screens separated by about 1 cm. of air were used, as a single screen was liable to conduct heat through to the skin. It is of great importance to keep the distances constant, in view of the rapid falling-off of light intensity with distance. Care was taken that the light should fall normally on the skin and that there should be no undue pressure from the screen.

Constancy of Response to Equal Irradiation of Symmetrical Areas of Skin.

1. Six experiments (12 exposures) were made on six subjects by exposing corresponding areas for three minutes to a mercury-vapour lamp (2 A, 145 V), 22 in. distant; the light was filtered through a distilled water screen.

2. Six similar experiments (12 exposures) were made with an addition of infra-red radiation to the filtered mercury-vapour light. (The source of infra-red radiation was placed at an angle between the skin and the quartz cell, which was fixed in an asbestos screen.) Identical depths of erythema were obtained in corresponding couples of exposures in each of the 12 experiments, though minor differences in the rate of fading were noticed.

We wish to emphasise the necessity and reliability, as shown by these experiments, of this method of observation—i.e., of using corresponding areas on the two sides of the body.

Effect of Varying Exposures on the Depth of Erythema.

A series of six experiments on five subjects was made to determine what percentage increase of exposure will produce a perceptible difference in the depth of erythema. Exposures to a mercury-vapour lamp (1·75 A, 150 V) at 23 in., for 5, 4, 3, and 2 minutes respectively were given. The latent periods increased with decreasing exposures—e.g., in one experiment from 2 to 3½ hours, in another from 4½ to 9½ hours. The erythemas observed showed that at least 20 to 30 per cent. increase of exposure is necessary to produce a perceptible difference of erythema, and that a careful observation of the latent periods under identical conditions of exposure is a more accurate indicator of the length of exposure than the observation of the depth of actinic erythema.

Experiments with Mercury-vapour Light to which Infra-red Rays are Added.

1. A preliminary series of ten separate experiments on five subjects was made, using a Kromayer lamp as source of filtered ultra-violet light, and the radiator described above as a source of infra-red rays. Small corresponding areas were exposed to the ultra-violet radiation, and to the ultra-violet and infra-red radiation respectively, the distances and exposures being kept constant in any one experiment. With distances from the lamp of from 10½ to 12 in., exposures of from three to five minutes, and heating to the limit of toleration (radiator 6–8 in. distant) the actinic erythema was diminished by the addition of the infra-red radiation in all the experiments, and (where a conclusion could be drawn) the latent period was definitely delayed on the side exposed to infra-red rays. The maximum difference was found in an experiment in which the latent periods were five hours and eight and a half hours respectively, while in two cases faint erythemas, with latent periods of six and seven hours respectively on the one side, were suppressed on the side exposed to infra-red rays.

2. Five experiments were made in which the tissues on one side were cooled by a draught of cold air (driven by an electric motor) during irradiation with the Kromayer lamp. The other side received a similar irradiation with the addition of infra-red radiation in two experiments, and a hot air draught in two other experiments, while in the fifth experiment the Kromayer light only was used. The erythemas were greater and the latent times less on the cooled side in four cases, while in the one case (cf. hot *v.* cold draught) no detectable differences were seen.

3. In the two series of six experiments each, devised to investigate the constancy of response of symmetrical areas, it was noticed that in the experiments in which filtered mercury-vapour light alone was used bigger reactions were obtained with shorter latent periods than in the experiments in which infra-red radiation was added to the filtered mercury-vapour light. The exposures in all 12 observations were three minutes and the distance from the lamp 22 in., so that the results were comparable.

4. Six experiments were made using a mercury-vapour lamp of the Hanovia type (without a reflector) and a water filter (depth 4 cm.), and on one side adding infra-red radiation. The addition of heat diminished the erythema in three cases, while no detectable differences were observed in three cases. In four cases the latent periods were increased, while in the other two cases they were approximately equal.

A summary of the experiments is given below.

Series.	No. of expts.	Erythema.		Latent periods.	
		Diminished by heat.	Visually equal.	Increased.	Decreased.
1.	10	10	0	6	0
2.	5	4	1	4	0
3.	6	3	3	6	0
4.	6	3	3	4	0
Total ..	27	20	7	20	0

In no case was the erythema increased by the addition of infra-red rays, and the visually equal erythemas are neutral evidence, since quite considerable differences of exposure are necessary to give visual differences in the depth of the erythema. The latent periods observed varied from about one to ten hours in different experiments; in no case were these diminished by the radiant heat. A difference of colour was always noted between two areas, one of which had been heated by the addition of infra-red rays or by conduction. The addition of heat causes a scarlet or vermilion erythema as compared with the more crimson or carmine colour of the usual mercury-vapour erythema. The same differences in colour were observed when comparing the actinic erythema following carbon arc light irradiation with that following irradiation with the same light filtered through water.

Experiments with Water-filtered Carbon Arc Light.

In this series a carbon arc was used because of the large amount of heat which it emits. Any small fluctuations of light intensity due to the flickering of the arc are immaterial when the two areas are irradiated simultaneously. Comparative observations of the erythema produced by the unfiltered and filtered rays were made in three ways.

1. Exposures to the Finsen-Reyn lamp through the quartz applicator empty, and subsequently through the quartz applicator filled with distilled water. Four experiments (one subject) were made. On account of the fluctuations of light intensity, experiments of this type are of little value and the experimental results were variable and contradictory.

2. Exposures of a larger area of skin, part of which only was covered with the quartz cell filled with distilled water. Three experiments were made, but they are of doubtful value, for the diminution of erythema observed is probably due, as was shown by photography, to a diminution of light after passage through the cell. Two similar experiments using a mercury-vapour arc gave similar actinic and photographic results.

Experiments of this type are quoted by some investigators as proving that an increased erythema is produced by screening through water. In our observations the screened side gave consistently smaller reactions. These experiments differ from those described in the other sections in that the control area does not receive the same, but a larger dose of ultra-violet light. Some of the loss of light was thought to be due to reflection at the surface of the cell.

3. Exposures through a circular quartz container, half filled with distilled water, so that the lower half only of the exposed skin received filtered light. Fourteen experiments on two subjects were made. Here again difficulties were encountered, sometimes due to the formation of water vapour in the upper part of the cell, a difficulty which was overcome by adjusting a stream of distilled water through the lower half of the cell from a Marriotte's bottle. Increased erythema in the lower half of the field was obtained in 5 of the 14 experiments; the other 9 showed equality. The lower field was noticed to be more brightly illuminated; the matter was investigated photographically by substituting a piece of Seltona P.O.P. paper for the skin, and exposing it to the radiation. Total reflection at the surface of the water actually increased the illumination in the lower half.

We have described this method carefully because erroneous conclusions have been based on experiments of this apparently accurate type. We wish to emphasise the difficulties inherent in the use of filters and to compare the inconclusive results obtained in the experiments described in this section with those in which heat is added during, before, or after the exposures to ultra-violet light.

P.O.P. paper was found to be a convenient method for comparing varying amounts of radiation from any one given U.V. lamp. From 5 per cent. to 10 per cent. (according to the depth of colour) increase of exposure to a given source of light is detectable—i.e., the paper is about four times more sensitive to variations in length of exposure than actinic erythema. Screening the paper with glass (absorption to 3300 A.U.) almost completely prevents darkening of the paper with the same lengths of exposure. The paper provides, therefore, a simple and sufficiently accurate method of examining the filters used in experiments of this type. Examination with a Beck ultra-violet spectroscope was a further check on the filters.

Effect of Heat following or preceding Irradiation with a Mercury-vapour Lamp.

These experiments were undertaken to determine whether heat, either in the form of "long-wave" radiation or from a hot water bottle applied to the skin, affects the erythema produced by the unscreened light of a mercury-vapour lamp, when the heat (1) follows, (2) precedes the ultra-violet radiation.

Sixteen experiments were performed on five subjects, placed 23 in. from the lamp. The current and voltage in any particular experiment were kept constant. The exposures given were three or four minutes, these being sufficient to give actinic erythemas in two to five hours, lasting from one to several days. Immediately before or immediately after irradiation the skin was heated from five to ten minutes by radiant heat or by a large corked test-tube of hot water, until a good diffuse primary erythema was obtained lasting half an hour or longer.

1. *Heat following irradiation.*—Eight separate experiments on three subjects were made; in four the skin was heated by means of the radiator and in four by means of the hot water test-tube. In six cases heat diminished the reaction; in one case heated by the radiator and in one case heated by the hot water no perceptible differences in the depths of erythema were seen. The usual differences in colour were observed. The latent periods were always increased. The duration of erythema was definitely shortened in five cases.

It was noticed that the part previously irradiated with mercury-vapour light was found to be very sensitive to heat. A painful sensation as compared with ordinary "warming" was experienced over this area when the tissues were warmed by either method.

2. *Heat preceding irradiation.*—Eight experiments on four subjects, in five of which the skin was heated by the radiator and in three of which the hot water bottle was employed, gave increased reaction on the heated side in six cases, while in two cases the reactions were apparently equal in depth. The usual differences of colour were noticed. There was slight delay (about 10 mins.) in three cases, otherwise the latent periods were not appreciably altered.

We conclude that when heat precedes irradiation there is a slight increase in actinic erythema. This effect is opposite and less than the diminished erythema which is obtained when heat either follows the irradiation or is applied simultaneously with the irradiation.

Conclusions.

1. Heating tissues by radiation or by conduction (radiator, hot water in vessel) after exposure to ultra-violet radiation diminishes—or suppresses—the actinic erythema and delays its appearance.

2. Heating of tissues by radiation of conduction before exposure to ultra-violet radiation increases the actinic erythema. The time of appearance of the actinic erythema is not appreciably influenced.

3. Heat (radiant heat or hot air draught) applied simultaneously with ultra-violet irradiation diminishes—or suppresses—the actinic erythema and delays its appearance.

4. Differences in colour as well as differences in depth of reaction are noticeable. The actinic erythema of the heated skin is more scarlet or vermilion (similar in colour to the primary erythema), as compared with the actinic erythema produced by the mercury-vapour or water-filtered carbon arc light, which is more crimson or carmine.

5. Differences of 20 to 30 per cent. of exposure to ultra-violet light are necessary to produce visual differences in the erythema. Smaller percentage differences of exposure to a given source of radiation will give appreciable differences in the latent period—i.e., the time elapsing before the appearance of erythema.

6. The diminution of actinic erythema by heating the tissues, either with radiant heat or by conduction, during ultra-violet irradiation, suggests a "physiological" rather than a "physical" cause for the diminution observed. The fact that at least equally satisfactory diminution of erythema can be obtained by heating after irradiation with ultra-violet light cannot be explained by physical interference or antagonism of the rays.

The observed action of ultra-violet light on the sensitiveness of the skin to thermal stimulation appears to be immediate and requires further investigation. It is suggested tentatively that this action may be a factor in determining the degree of actinic erythema in cases heated simultaneously or after ultra-violet irradiation.

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(*References at foot of next page*).

OBSERVATIONS ON VACCINATION.*

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ALTHOUGH the method of prophylactic immunisation against small-pox has undergone no fundamental change since Jenner's time, certain modifications and improvements have been made in it. Arm-to-arm vaccination has been abandoned for obvious reasons. Vaccine lymph is now produced in large quantities and under carefully controlled conditions. The calf is the animal most generally employed for this purpose, but since the virus of cow-pox tends to behave irregularly after prolonged passage in this animal, passage through other animals, such as the rabbit, has become necessary from time to time to rejuvenate the virus. Again, when fresh seed lymphs are required one now has recourse to cases of small-pox. The virus of small-pox, when established either directly in calves or after preliminary passage through monkeys or rabbits, acquires the characters of cow-pox; in fact, the two viruses are immunologically identical, and differ only in their species adaptation.

The Jennerian method of vaccination has always had its opponents. These have steadily increased in number, and it is claimed by the antivaccinators that this method of preventive inoculation is attended not infrequently by untoward consequences. These claims have been very largely discounted by the medical profession, and rightly so. Opposition has come almost entirely from those ill-qualified to pronounce on the matter, and it has been felt that the claims were the outcome of too free a use of that faulty line of reasoning, *post hoc ergo propter hoc.*

Encephalitis.

Of late years, however, a complication of vaccination has made its appearance which, though of rare occurrence, is disquieting because of its high rate of mortality. I refer, of course, to post-vaccinal encephalitis. The onset is abrupt, some 9 to 12 days after vaccination, with headache, vomiting, and drowsiness. The patient usually passes into coma, and the other signs present vary with the portion of the central nervous system involved. About half the cases end fatally; those that recover do so completely without residual symptoms. This form of encephalomyelitis closely resembles those cases which occur rarely in the course of acute infectious diseases, such as measles, small-pox, chicken-pox, and mumps, and this resemblance extends to the essential histological lesion which has been shown to be a perivascular demyelination.

Post-vaccinal encephalitis was first recognised in 1912, when a case occurred at the London Hospital. It reappeared in 1922 when, again at the London Hospital, four cases were recognised and submitted to a detailed investigation. Between 1922 and 1927, 93 cases have occurred in this country, representing an incidence of 1 in 48,823 persons vaccinated; 62, or 66·6 per cent., of these cases occurred in patients between the ages of 5 and 14 years. Apparently the unvaccinated infant and persons submitting to revaccination are not susceptible. This statement requires some slight qualification since Turnbull has described one case in an infant under three months. However, this appears to be the only case of the kind on record, and one may therefore conclude that the susceptible individual is the one submitting to primary vaccination at any age after infancy, but more particularly between the ages of 5 and 14 years. In this connexion the figures for post-vaccinal encephalitis in Holland are of interest. In that country primary vaccination has been very largely practised at school age, and for the period 1922–27, 123 cases occurred out of 495,431 vaccinated, or 1 in 4028. This gives us a clearer conception of the risk attendant on primary vaccination in those other than infants.

The ætiology of post-vaccinal encephalitis remains obscure. There are three hypotheses current. The condition may be due to the vaccinia virus; infection with the vaccinia virus may light up a dormant neurotropic virus which the patient was harbouring; or, as has been most recently claimed, the condition may be a toxic one. The last conception seems to me difficult to accept. Occasional cases of post-vaccinal encephalomyelitis have taken the form of a transverse myelitis without other involvement of the central nervous system, and these cases are not readily explained on a toxic basis. The probability is, therefore, that we are dealing with a condition produced either directly by the vaccinia virus or indirectly through the activation of an unknown latent virus by the vaccinia virus. Whichever of the two views may be correct, it appears to me necessary for the vaccinia virus to invade the body generally, and the central nervous system in particular, for post-vaccinal encephalitis to occur.

The Practitioner and Vaccination.

The question of practical importance is: What is to be the attitude of the medical practitioner towards vaccination? There are those whose reply is: Continue vaccinating as before. It is inconceivable to my mind that any one should adopt such an attitude. Were we dealing with protection against the risk of virulent small-pox there might be some excuse for this attitude. Even so, it would be a confession of ineptitude on our part. But the type of small-pox in this country at the present time is extremely mild and rarely fatal, so that to continue vaccinating as before would be to ask the individual to submit to a prophylactic measure whose risk of death equalled that of the disease against which he was being protected.

Obviously something must be done.

Diluted Lymph.

It is clear from animal experiments with vaccinia virus that the degree of invasion varies directly with the dose inoculated. It occurred to me therefore that the risk of encephalitis should be lessened if a smaller inoculum were used, and during the last three years diluted calf lymph has been in use at the London Hospital, though only in the last six months has it been used at all excessively. The dilutions have varied from 10- to 50-fold, the diluent employed being an M/50 phosphate solution, pH 7·6, though saline or sterile water could be used. The diluted lymph is used within 24, or at most 48 hours, after dilution, and it has been the practice to vaccinate in two places, using a crucial incision of $\frac{3}{8}$ inch diameter. The Vaccination Committee of the Ministry of Health obviously had the same idea, for they recommended one insertion of the undiluted lymph by means of a $\frac{1}{2}$ inch linear incision in place of the usual cross hatching.

It is not claimed that the use of diluted lymph is the solution of the problem with which we are faced. It is, however, reasonable to suppose that it considerably reduces the risk of post-vaccinal encephalitis. It certainly gives much more satisfactory takes, and

* Being a paper delivered at the London Hospital Post-graduate Course on Oct. 16th.

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out of some 700 patients so vaccinated no excessive reactions have been observed. The number of primary vaccinations at a susceptible age has been very small, so that, of course, it is impossible to draw any conclusions as to efficacy of this method as a means of avoiding post-vaccinal encephalitis. However, no such cases have occurred. The ideal to be aimed at is a perfectly safe method of immunisation against small-pox, and it is our hope that such a method will be evolved. It has been shown that if the virus of foot-and-mouth disease is inactivated by means of formalin in low concentration it still retains its antigenic properties, and this method has been employed in the preparation of vaccines for distemper and yellow fever. Work is in progress here to find out whether some such method could not be applied to the vaccinia virus.

These experiments, which are being carried out by my colleague, Dr. J. Bland, are as yet in their infancy, and it is impossible to say what the outcome of them will be. In the meantime, however, I would make the following suggestions: (1) When vaccinating infants, or performing revaccination, use lymph diluted 1 in 10, making one or two insertions with a crucial incision (*no cross hatching*), or vaccinate as the Ministry of Health have recommended, making one insertion with a single linear incision, using undiluted lymph. (2) When called upon to perform primary vaccination in any person other than an infant, find out first of all if it is absolutely necessary to vaccinate. The only condition rendering vaccination necessary in such a case would be the risk of exposure to *virulent* small-pox. If you *have* to vaccinate a susceptible individual, then do so with lymph diluted 1 in 50, making one insertion with crucial incision.

THE MEDICO-LEGAL SIGNIFICANCE OF BLOOD GROUPS.

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THE establishment of paternity by application of the rules governing the inheritance of the blood groups is now receiving a great deal of attention. The results obtained with this method were recently reviewed in a leading article in THE LANCET (1928, ii., 711). I propose to make some observations on this article.

What does the Blood Test Establish?

A case of doubtful paternity may be chosen in order to demonstrate the application of the method. Here the blood groups of the mother and the child would be established as well as that of the alleged father (possibly those of several men). The results obtained are then considered as to whether or not they are consistent with the rules governing the transmission of blood groups from parents to offspring as established by von Dungern and Hirszfeld (1911) and by Bernstein (1924). According to whether this conformity has been established or not the answer would be: (1) the man examined may be the father; (2) the man examined cannot be the father.

It is evident that the "blood test," far from being a method for diagnosing paternity, is, in certain cases, capable of merely excluding an alleged paternity. The methed should, therefore, correctly be called "a test for the exclusion of paternity." The exclusion, of course, of a man who had been denounced unjustly can be established in one out of six or seven cases only.[1] This is due to the small number of blood groups existing. It often happens that a man who is not the father belongs to the same group as the actual father; in addition, there is a high incidence of cases showing such a disposition of the blood groups of mother and child as to preclude a priori any inference being drawn from the blood group of the father.

In the leading article above the position in Germany was referred to in detail; in that country the "blood test" has been systematically applied in forensic medicine since 1924.[2] It is very difficult for the outsider, and especially for the foreigner, to judge the position in Germany, owing to complicating juridical factors. It is understandable, therefore, if some misinterpretations have crept into the article in THE LANCET which I shall now try to correct.

Certain Misinterpretations.

The leading article in THE LANCET contains the following statement: "It has been laid down in Prussia that 'the impossibility of fatherhood cannot be legally regarded as being established absolutely (einwandfrei) by a blood examination.'" This quotation, it is true, reproduces the opinion of some judges, including one member of the Supreme Prussian Court of Appeal, but it does in no way represent a decree ruling out the acceptance of the results of the blood test as the basis of a verdict in the court. The sentence quoted represents only the individual opinion of a minority of jurists. Judge Leonhard is not the President of the Prussian Court of Appeal, as would be assumed according to the article in THE LANCET. He is President merely of one out of some 30 departments of this court, and his opinion has been contradicted not only by other departments of this court but also by numerous leading members of the bar and of the medical profession.[3] Leonhard [4] himself recently admitted that those who accept the blood test as a reliable means of evidence represent the dominant trend of opinion. Official decrees have been published in various States of the Reich[5] directing the attention of the courts to the new method of evidence and pointing out explicitly that it is capable, in suitable cases, of proving the impossibility of fatherhood. These decrees regulate at the same time the details of the procedure of a more administrative nature. Numerous verdicts of supreme courts of appeal have been published which have been based on the results of the blood examination.[6]

The leading article in THE LANCET contains the following quotation from an official statement made by the Supreme Medical Council of Austria: "In the majority of cases the results of blood examinations will not assist in the establishment of paternity." German lawyers and medical men, too, interpreted this statement, but mistakenly, as a criticism of the reliability of the method. To the expert, however, it appears simply as a banality, indicating the well-known fact mentioned above, that the method is capable of affording a useful result in a minority of cases only. The decisive point, however, is, what is the attitude adopted by the courts in those cases in which the constellation of blood groups contradicts the possibility of fatherhood? In THE LANCET paper it is assumed, but not correctly, that no provision whatever has been made with regard to these cases. The promulgation referred to, published in the Official *Gazette* of the Austrian Administration of Justice, Nov. 8th, 1927,[7] stated explicitly: "According to the various blood groups established in an individual case the result obtained is capable of proving the impossibility of fatherhood for a given man." In accordance with this decree in Austria numerous verdicts have been based exclusively or for the greater part on the evidence afforded by blood grouping. A number of these verdicts, including such passed by the Vienna Supreme Court of Justice, have been published as long ago as in 1927.[8]

Exact data showing the extent and scope of the blood test in Germany have become available through an inquiry made by the writer on behalf of a committee formed by the Reichsgesundheitsamt (see *Medizinische Welt*, August 24th, 1929). The fact was revealed, surprising even for those acquainted with German conditions, that more than 5000 medico-legal examinations of this kind have already been

performed. It is true this total number covers a period of some five years; the vast majority of examinations, however, has been performed in the course of the last two or three years. At the end of 1926 I was able to collect information about 88 cases only. Due allowance being made for the probable incompleteness of the latter figure, still there is no doubt that the true total of cases dealt with up to that date could not have been more than some hundreds only. The rapid spread of the application of the method resulted from an extensive discussion which took place at the meeting of the German Society of Forensic Medicine, September, 1926.[9]

This material offers some information as to the efficiency of the method attainable in practice. Out of a total of 5500 law-suits (including some cases from outside Germany) the exclusion of paternity was decided upon in 8 per cent. of the cases. Taking into account that theoretically not more than 16 to 18 per cent. can be obtained, provided that in no instance an actual father is amongst those examined, then it may be stated that in those law-suits in which the blood test has been applied, roughly every second man had been denounced unjustly.

Application in the German Courts.

The method is applied as follows in the practice of German courts.

1. *Civil Suits.*—(*a*) Suits for maintenance of children born out of wedlock (by far the most frequent application): (1) an alleged father is trying to prove that his fatherhood is out of the question; (2) the illegitimate child or his legal representative wishes to exclude a second or third man, who also had had relations with the mother, in order to urge the remaining man to perform his duty of maintenance.

(*b*) *Suits for Divorce* (Eheprozesse): (1) it is moved by a husband or by the child itself that a legitimate child shall be declared to be an illegitimate one; (2) the illegitimacy of a child shall be proved in order to establish the fact of alleged adultery.[10]

2. *Criminal Processes.*—(*a*) In cases of alleged violation or incest it is claimed by the mother that she had had relations with the accused man only. If his paternity is excluded by the blood test then the falsity of the accusation is proved and the defendant is acquitted. (Several impressive cases of this kind have occurred.)

(*b*) In civil processes false evidence is often given and sworn, for instance, by a mother, who, according to German law, in a law-suit of her child's, does not appear as one of the parties, but as witness. Such false witness has in several instances been disclosed by the blood test, the false witnesses consequently being punished and judgments previously wrongly passed being revised.[11]

The Committee of Experts recently convened by the Reichsgesundheitsamt, and including the leading representatives of forensic medicine, serology, and the science of inheritance, unanimously expressed the opinion that the examination of the blood groups, when performed by an expert, "is a reliable method which may be used advantageously for forensic purposes, *especially for the exclusion of paternity.*"

Bernstein's formula of inheritance is generally accepted as the principle underlying the method. According to this formula the rules governing the inheritance of blood groups, as originally discovered by von Dungern and Hirszfeld, may be amplified in so far as the fatherhood of a man with the group AB in relation to a child O can be excluded as well as the fatherhood of a man O in relation to a child AB. Bernstein's theory was given additional support by the results of my inquiry already referred to. Amongst 5242 couples of mother and child, examined with especial carefulness, there was found in no instance a combination deviating from Bernstein's rule. It may safely be assumed that what is valid in relation to mother and child is equally valid in relation to father and child. Observations on the relationship between mother and child are of special significance, since in this case errors are almost entirely excluded.

In view of the importance already gained by this method the endeavour is made to ensure officially the reliability of the examination. Only a few especially competent experts shall be entitled to perform the examination. In Berlin, Frankfurt, and Nürnberg there are special medico-legal experts sworn in for the performance of examinations of blood groups only. In some States (Bavaria, Saxony, Würtemberg) the examinations have been centralised in one single or in a few institutes only—e.g., university institutes of forensic medicine.

As far as the serological technique is concerned[12] the principle has been accepted years ago that the diagnosis should be made on the ground of a cross-examination—i.e., the examination of the red cells and of the blood-serum each separately. In babies in which the formation of agglutinins is not yet accomplished, a repetition of the test is performed some months later. The examinations are made in several parallel series with various samples of test sera and test erythrocytes respectively. In addition to the human serum of group B as usually used for diagnosing the antigenic factor A serum from rabbits immunised with sheep red cells have also proved valuable owing to their high titre and resistance.[13] Official directions concerning all details of the examination are now in process of preparation; further, it is intended to submit all commercial test sera to Government control.

Conclusion.

The blood test is in use on a large scale in Germany and elsewhere, especially in the Scandinavian countries. O. Thomsen, Copenhagen,[14] has reported 50 cases examined for the courts, in Norway some commencement has been made, and in Sweden E. Wolff, professor of forensic chemistry in the University of Stockholm, has already performed more than 160 official examinations. A departmental opinion was passed at the University of Lund (Forssmann, Sjövall, Essen-Möller) expressing itself very strongly in favour of an extensive application of the method, and there, too, provision has been made to entrust only well-trained serologists with the performance of the examination.

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Clinical and Laboratory Notes.

A CASE OF ABDOMINAL AORTIC ANEURYSM, WITH RUPTURE AND FORMATION OF FALSE ANEURYSM AND EXTENSIVE EROSION OF VERTEBRÆ.

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Cases of aneurysm of the abdominal aorta are comparatively common, and terminal rupture of the aneurysm is by no means rare. In the following case death occurred probably five months after the first rupture, and the history of the intervening period and the post-mortem findings seem worthy of record.

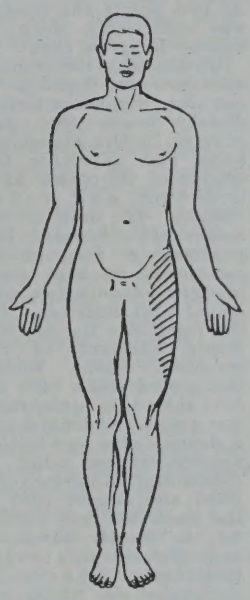
The patient, a storeman aged 43, was admitted to the Glasgow Royal Infirmary on Sept. 27th, 1927, complaining of pain in the abdomen. Four weeks before admission, while at work, he had been seized with an attack of acute pain in the right side of the abdomen. The pain had been very severe, "doubling him up," and had lasted for about 20 minutes. He had continued at work, but during the next two weeks the pain had recurred at intervals, commencing in the left upper abdomen and shooting downwards and outwards toward the left flank. On Sept. 19th he was compelled to give up his work as the attacks were occurring more frequently—three or four in the day—and the pain now radiated downward to the outer side of the left thigh. He made no complaint save of pain. His work was very hard, involving heavy lifting. He had always been a heavy drinker. He had had dysentery in Salonica in 1917 and had been in hospital for six months; but apart from occasional attacks of "influenza" he had otherwise been very healthy.

He was a small well-built man of healthy appearance. The abdomen was slightly distended, the distension being most marked in the upper part and particularly on the right side below the costal margin. Palpation in this area revealed a mass below and easily separated from the liver, slightly tender, with a rounded lower margin, and distinctly pulsatile. The pulsation was both forcible and expansile. On auscultation the cardiac sounds were heard even more distinctly than over the præcordium, and there was a loud systolic murmur. The spleen could not be felt, but there was some tenderness in the left hypochondrium. There was some general rigidity of the whole abdomen but no ascites. Posteriorly there was considerable resistance to palpation in the left lumbar region and immediately below the ribs a pulsating swelling was apparent, involving the twelfth rib in its movement. In this area also the heart sounds were heard with great distinctness. The lower dorsal and upper lumbar vertebræ were almost fixed and the spine showed a slight general kyphosis. He complained of pain in the left iliac region radiating down the outer side of the thigh. In the area of distribution of the ilio-hypogastric and external cutaneous nerves there was an anæsthesia to touch and pain (Fig. 1). The epigastric and abdominal reflexes were absent. The knee-jerks and ankle-jerks were present and equal. The plantar reflexes were equal and flexor in type. All other reflexes, including the pupillary, were normal. Movement at the hip- and knee-joints was free and painless. The heart was normal in size and position. There was a short systolic murmur at the apex and over the sternum. The lungs were normal. The liver was slightly enlarged. The urine was normal. The Wassermann reaction was +++ positive.

Radiography of the spine on Oct. 17th showed a lack of definition in the left border of the eleventh and twelfth dorsal vertebræ, and a distinct shadow on each side of the ninth, tenth, eleventh, and twelfth dorsal vertebræ.

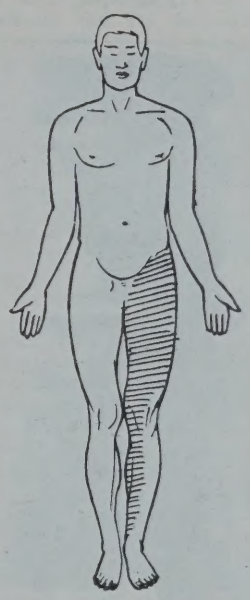
On Oct. 24th the patient complained of very severe pain in the left leg extending downwards from the buttock. He became very pale and collapsed with a weak and rapid pulse. Pulsation could still be felt in the upper abdomen and in the lumbar region, but the heart sounds were much more faintly heard. The entire left side of the abdomen became rigid but not tender. By the next morning he had rallied and appeared little changed, but the abdomen was now generally distended and rigid and there was a large area of dullness to percussion in the left flank. The left leg was held flexed at the hip and knee and any attempt to straighten the leg caused acute pain. No pulsation could now be detected in the left femoral artery. The right femoral artery was easily felt. On Oct. 26th and again on Oct. 31st similar attacks occurred, each of shorter duration, lasting about an hour. But whereas severe pain had preceded the collapse in the first attack, in the second and third attacks the collapse occurred without any pain whatsoever. From both attacks he recovered under stimulation. On Nov. 2nd a band of bluish discoloration was noted in the left flank, and the abdominal wall showed an area of induration and swelling clearly due to extravasated blood. The left knee-jerk could not now be elicited, but the left plantar reflex was present and flexor. There was complete anæsthesia over the front of the left thigh and the muscles of the thigh and leg were considerably atrophied. Gradually the discoloration disappeared and the indurated area in the abdominal wall became smaller, harder, and more defined above. Below it had spread downwards over Poupart's ligament, and the femoral artery could now be felt pulsating

Fig. 1.



Area of anæsthesia to touch and pain on Oct. 17th.

Fig. 2.



Area of anæsthesia to touch and pain on Nov. 29th.

to its inner side. There was movement of the left foot and toes, but the leg could not be extended, probably on account of the pain, as the muscles could be felt to contract when the attempt was made.

On Nov. 26th œdema appeared in the left foot and leg. Bed-sores began to form over the back and legs. The general condition had greatly deteriorated and morphia became necessary on account of the discomfort. On Nov. 29th the mass on the left side had become very hard and localised. The sensory disturbance had increased in extent, involving the inner side of the left lower leg, and was clearly of root distribution (Fig. 2). The left plantar reflex remained active and flexor and vibration sense was unimpaired in the leg. On Dec. 8th incontinence of fæces commenced and on Dec. 19th the abdomen was much distended with free fluid. On Dec. 20th he had another attack of abdominal pain and collapse, from which he again recovered. Increasing œdema and weakness made accurate examination difficult, but the area of anæsthesia appeared unchanged. In spite of morphia, any attempt at movement at the left knee or hip still produced intense pain. The left knee-jerk remained absent, but the foot and toes could still be moved. On Jan. 5th an area of dullness was detected at the base of the left lung with diminished breath sounds. He became progressively weaker and died on Jan. 17th, 1928.

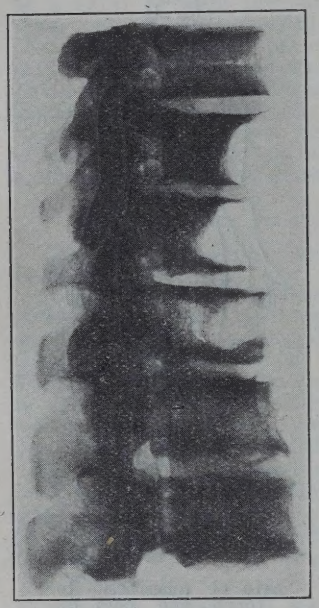
Post-mortem Report.

The valves of the heart appeared normal except for slight sclerosis in the aortic cusps. The myocardium showed nothing of note. A few atheromatous patches were evident in the coronary arteries. There was no evidence of syphilis in the thoracic aorta. The left lung showed collapse of its lower lobe due to a collection of about one pint of blood in the pleural cavity. The abdominal cavity contained about two pints of deeply blood-stained serous fluid. The liver was slightly atrophied; the spleen was more than twice its normal size.

Pushing forward the lesser peritoneal sac and appearing between the gall-bladder and the hepatic flexure of the colon

was a large aneurysmal sac about the size of an orange. The appearance of the sac suggested that the aneurysm was of considerable duration. Evidently connected with this, and occupying the entire left half of the abdomen retroperitoneally, was a large false aneurysmal sac. The left kidney was involved in the mass, the outer border of which was difficult to define, as the partially organised blood clot appeared to fuse with the tissues of the left flank. The lower end of the dilatation had a similarly indefinite margin where the tissues above and below Poupart's ligament were in an obvious state of early necrosis. There was deep erosion of the bodies of the tenth, eleventh, and twelfth dorsal and first lumbar vertebræ (Fig. 3). The second lumbar vertebra presented a considerable erosion on the left side of its body close to the transverse process. The erosion was irregular and the intervertebral discs had been largely spared. At two points the erosion was sufficiently deep to expose the spinal canal.

FIG. 3.



Showing erosion of vertebræ.

On dissection the original aneurysm was found to be saccular, originating immediately below the diaphragm in the abdominal aorta and involving the origins of the cœliac axis, mesenteric and renal vessels. The drag of the mesenteric vessels had produced a deep groove anteriorly, so that post-mortem examination suggested a bilocular sac. On the right side the sac was firmly adherent to the vertebral bodies behind the eroded areas. On the left side the attachment was not so well defined, and a definite edge to a further aneurysmal sac could be determined. Anteriorly this third and largest part of the aneurysm was limited by the greatly thickened and fibrosed posterior peritoneal layers, incorporated in which was the crushed and apparently functionless left kidney. The aneurysmal cavity was filled with soft laminated mixed clot. No definite posterior limit could be determined, the clot being limited by the muscles of the posterior abdominal wall. The source of the final hæmorrhage into the pleural cavity could not be determined satisfactorily.

Reviewing the case as a whole in the light of the post-mortem findings, the course of events would appear to have been somewhat as follows. The attack four weeks before admission was probably due to the first rupture of the aneurysmal wall and involved the tissues to the right of the vertebral column. This, however, did not recur, as the right-sided pain disappeared and did not return. In some of the subsequent attacks before admission extension occurred against the left side of the vertebral column and pain was then experienced on that side. At first the nerves distal to the sacral plexus roots (ilio-hypogastric and lateral cutaneous) were involved, but by Nov. 29th the roots themselves had become affected and the sensory defects became definitely of root distribution. In the earlier attacks the nervous tissues were irritated and pain was acute, but latterly (after Oct. 26th) pain was practically never complained of and the sensory loss became the main feature of the case. The area of anæsthesia and the loss of the left knee-jerk pointed to the destruction of roots D 1 and 2 and L 1, 2, 3, and 4. The persistence of the flexor plantar reflex showed that L 5 and S 1 and 2 were not involved and, with the unimpaired vibratile sensation in the leg, suggested that the cord itself was not affected. Post-mortem examination showed the cord to be undamaged.

I am indebted to Dr. John Cowan for permission to publish this case and to Mr. J. A. G. Burton for the pathological report.

THE PERSISTENCE OF ANAEROBIC BACTERIA IN WAR WOUNDS

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THE conditions under which the late war was fought rendered it certain that penetrating wounds, due to projectiles, would contain the spores of anaerobic bacteria, and in fact the incidence of "gas gangrene" throughout the war, and tetanus in the early stages, was a serious problem. Experiments on animals show that these spores, when injected, persist a long time, certainly for months; and surgeons, as a result, are in the habit of protecting patients, in whom it becomes necessary to remove pieces of shrapnel, with antisera. It is of interest, therefore, to discover whether such foreign bodies do in fact harbour the spores of typical war time anaerobes, and especially of the pathogenic forms. In the "Medical History of the War" it is stated that anaerobic organisms have been isolated from war wounds for periods up to five years. The recorded organisms are *B. welchii*, *B. sporogenes*, and *B. tertius*, and probably *B. tetani*.[1]

An Exceptional Case.

Opportunities for examination of retained foreign bodies will become progressively fewer, and even now only those cases come to operation where pain, infection, or a persistent sinus render it essential. I have therefore been in the habit of culturing all such foreign bodies after operation. Nearly all of them have yielded anaerobic spore-bearing organisms, but, apart from the case here related, no pathogenic effects have been found in animals on injection, and the organisms have most closely resembled *B. sporogenes*.

The exceptional case was that of a man aged 35, who received multiple wounds in August, 1918. He believed he was shot with an explosive bullet by a sniper, but he was rendered unconscious, and the foreign body recovered appeared to be a piece of high-explosive shell. He was given a prophylactic dose of serum and two foreign bodies were removed from the arm. His wound became septic but he recovered in two months. He has since suffered from an extensive crop of boils around the site of the wounds; these appear to have been superficial. On one occasion he had a severe axillary abscess.

No sinus ever formed over the foreign body here discussed, which attracted attention owing to pain and swelling. It was situated very deeply in the scapular region, in relation to the posterior thoracic wall. It was operated upon by Mr. R. H. Boggon, resident assistant surgeon at St. Thomas's Hospital, and a large abscess was found, communicating through a sinus with the foreign body. The abscess was drained and the piece of metal, weighing about four grammes, removed. The wound discharged freely for several weeks. *Staphylococcus aureus* alone was grown from the discharge; no anaerobic forms were found in cultures or films.

The piece of metal was placed in Robertson's medium and incubated anaerobically. Vigorous gas formation followed; a hæmolytic streptococcus, facultatively anaerobic, was isolated. It never formed chains of more than four organisms, and showed a large proportion of Gram-negative forms. A subculture into Robertson's medium showed a mixed culture, including spore-bearing anaerobes of different types.

The original culture was also sown in a medium containing 75 per cent. of beef broth and 25 per cent. of fresh human serum. It was then boiled for ten minutes in a water-bath. A large Gram-positive bacillus was found which stained very irregularly, and grew frequently in pairs. Gram-negative forms were also found. Experiments were continued with this relatively pure culture. Subcultures were made on to blood agar and *B. subtilis* was also identified. Finally a single colony on blood agar was selected. It was a flat semi-transparent colony, growing with crenated edges, and apparently contained only a large Gram-positive mobile bacillus and a terminal spored bacillus. In Robertson's medium it rapidly digested the meat, and after two or three days there was some blackening. A crystalline deposit formed, containing leucine crystals but no tyrosine. The

[1] Official History of the War. Medical Services. Pathology, p. 142. London, 1923.

supernatant fluid remained cloudy. When examined after 24 hours a large Gram-positive bacillus was found, but on later cultures only irregular Gram-negative forms and spores were present.

A subculture was made into 2 per cent. maltose broth, and after 18 hours' incubation 0·5 c.cm. was injected intramuscularly into the leg of a mouse and a guinea-pig. Both animals died after 18 hours. The muscular tissue was digested down to the bone, which was visible. The liver and lungs were placed in a Petri dish and incubated. In 24 hours they were completely liquid. Smears from the site of injection showed both the large Gram-positive bacillus and terminal spored organisms. The guinea-pig's heart blood showed morphologically only the large bacillus.

Summary of Results.

Summarising the results to date, it will be noted that apparently a very mixed culture was grown from the foreign body; that this was purified by boiling for ten minutes; that at least two forms were still present after single colony culture; and that the heart blood of the dead animal showed, apparently, only one. Of course, morphological appearances are of little value among anaerobes.

The guinea-pig's heart blood was next incubated in Robertson's medium. Digestion both of it and of coagulated serum was rapid. Gas was not formed. Forty-eight hour cultures had no effect on three guinea-pigs. One c.cm. of an 18 hour culture, however, quickly produced massive œdema and liquefaction of tissues in three guinea-pigs. These were killed, as the lesions were obviously of the same type as those earlier recorded. Two c.cm. of *B. welchii* antiserum and 2 c.cm. of the patient's serum failed to give any protection when injected simultaneously with 2 c.cm. of culture. Five c.cm. of a 12-hour culture was filtered through a Seitz and injected intravenously into a rabbit; the animal remained perfectly well.

On further subculture the strain became again obviously mixed. Profuse gas formation and blackening and the medium suggested *B. sporogenes* and a terminal spored form *B. cochlearius*. However, a spore-bearing anaerobic motile Gram-positive bacillus, liquefying living tissue in early, but not in late, cultures, was present. Only one known organism, the rare *B. histolyticus* of Weinberg and Séguin,[2] conforms with these findings. It was found by them in a case of gas gangrene during the war, and has since been found in the soil and in the fæces.[3] This organism, together with several other anaerobic forms not identified, but probably including *B. sporogenes* and *B. cochlearius*, had been present in a patient's wound, without sinus formation, for more than eleven years. Certainly no lesions resembling those found in the animals were found in him. The hæmolytic streptococcus and the staphylococcus were quite sufficient to cause his symptoms. But the results, together with former ones, indicate that the spores of anaerobic bacteria, even of pathogenic types, may persist in war wounds for many years. Whether they might ever have become pathogenic is a question on which these results throw no light. The "Medical History of the War,"[1] however, states that serious and even fatal "flares" have followed such operations as these.

My thanks are due to Mr. J. B. Harman, who assisted in the bacteriological work here described, and to Sir Cuthbert Wallace for permission to publish this case.

[2] Weinberg, M., and Séguin, P.: Comptes rend. de l'Acad. des Sci., 1916, clxiii., 449.

[3] System of Bacteriology, Med. Res. Council, London, 1929, iii., 244.

A GUINEA SCHEME AT KING'S COLLEGE HOSPITAL.—The governors have adopted a new rule relating to guinea subscribers. Under this scheme subscribers who become private patients will be entitled to deduct the whole amount of their subscriptions from the cost of treatment.

DERBYSHIRE WOMEN'S HOSPITAL.—The Duke of Devonshire recently opened the new buildings of this hospital, which have cost about £43,000. There are over 40 beds, including a recovery ward, an X ray department, and seven sun balconies.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society, held on Oct. 28th, the chair was taken by Mr. DONALD ARMOUR, the President, and Mr. A. E. HAYWARD PINCH opened a discussion on

RADIUM THERAPY.

The early hopes of radium as a panacea for all ills, he said, had not been realised, but its subsequent derision had been equally unjustified. It was now universally recognised as a valuable and in many respects unique addition to the surgeon's armamentarium. He deprecated strongly the loose and indiscriminate use of the phrase "radium cure for cancer." Radium aided surgery but did not abolish it. Radium therapy—the treatment of disease with radium—was a very wide subject, and meant a great deal more than the treatment of malignant disease by gamma radiation. It could be divided into two main divisions: superficial, which might almost be termed beta radiation, and gamma radiation therapy with apparatus so screened as to emit only a minute portion of hard beta or pure gamma radiation. Superficial therapy was subdivided into the treatment of malignant and non-malignant conditions. It was extremely useful for a variety of disorders not very important in themselves, but sources of extreme annoyance to the patient—e.g., pruritus, corns, acute tender papillomata of the feet, and the acute tender papilloma of the ear which so effectively prevented sleep. One radium treatment was an absolute specific for these nine times out of ten. It might act as a charm occasionally in a case of lupus vulgaris which did not respond to light. It would not cure lupus erythematosus, but would improve the appearance remarkably and avert recurrence for many years. It was also extremely useful in bad keloids, such as were sometimes left by vaccination; it would at least flatten the scar. Diffuse cavernous nævus responded in an almost miraculous fashion. The malignant condition in which radium therapy was most useful was rodent ulcer. A cure could almost be guaranteed in 95 per cent. of cases with one screened treatment. Mycosis fungoides was another condition in which the outlook had been completely revolutionised by radium. Epithelioma of the cornea could not be needled, but an unscreened exposure of about an hour would practically cure every case; the growths were proliferative rather than penetrative. Sarcoma of the eye also benefited. He had treated dermatitis pigmentosa successfully.

Deep Radium Therapy: Gamma Radiation.

Of non-malignant conditions the first was menopausal hæmorrhage, in which deep gamma radiation was marvellous and an almost certain cure. Cure, however, must not be promised to a young girl with essential uterine hæmorrhage. Tuberculous adenitis, if treated before suppuration had occurred, could almost certainly be cured without disturbance of the skin or of the patient. Aspiration followed by radiation gave good results. Radium would not cure splenic leucocythæmia but would materially alleviate it and prolong life; the spleen receded from the iliac fossa to its normal impalpable position, unless there had been a good deal of fibrosis. The period of life of a patient with lymphadenoma was put in Osler at two years; after radium treatment it might be put at four or five years, and some cases had lived for six years. The glands disappeared and the patient gained in comfort and happiness.

The treatment of malignant disease by gamma radiation had been much discussed in the press.

There were only two types of case in which he would hesitate to advise radium instead of operation: when the growth occurred in a very œdematous zone, and when there was a strong syphilitic taint, which might cause intense destructive reaction. He described three typical problem cases, for all of which he would use radium: an endocervical carcinoma in a working-class mother; a mammary cancer in a society woman who feared disfigurement; and a cancer of the tongue in a man of 60. In 90 per cent. of cases radium would cause disappearance of a growth in uterus, breast, or tongue in five or six weeks. Removal of the primary growth, however, was far from constituting cure. Mr. Pinch confessed that he did not know the best method of treating the glands, whether by needles and seeds in and around, contact radiation from screened applicators, cross-fire or focal application. In some cases the result was remarkable, in other apparently identical cases nothing happened. One of the greatest problems of radium therapy was the successful treatment of secondarily infected glands. He had treated some hundreds of cases of carcinoma of the œsophagus and never cured one. One difficulty was to determine the exact extent of the disease; the bismuth meal gave length and apparent width, but no indication of the depth of penetration of the mediastinum. He had seen five cases diagnosed as cardiospasm; even a very thorough œsophagoscopy had not revealed any growth, but in four of them autopsy had shown a growth just behind the posterior wall of the stomach. Radium therapy could not be learnt in a week, however skilful the tutor or apt the pupil. In a year the pupil might possibly know enough about it not to do any mischief—but no more. There was no antidote to an overdose of radium: radium therapy must not be embarked on lightly. In Talleyrand's words "Pas trop de zèle," or—"For God's sake be careful." The Radium Institute would always be pleased to place its knowledge at the disposal of anyone who asked for it.

The Physicist's Attitude to Radium Therapy.

Prof. SIDNEY RUSS suggested that when a tube containing radium was put into the body, whether into malignant or non-malignant tissues, certain quite definite physical conditions had to be coped with. The question was how far the tube would have the desired action. Experimentally, parts of the irradiated tumour could be removed to test their viability in a susceptible animal. It was found that the cells had not been killed but would not grow. Radium did not cauterise cells, but caused some action which subsequently prevented proliferation. Doubling the dose did not double the range of lethal action, nor could the useful action of a tube be extended by leaving it in indefinitely, owing to local damage. Prof. Russ then showed diagrams illustrating how the intensity of a tube at various distances was calculated from the sine of the angle subtended by the tube. The intensity fell off very rapidly, so tubes were "staggered" in a line to supplement each other. It was astonishing how large an area could be uniformly irradiated by this method. By measuring the lethal range of a tube in animal tissues a fairly clear idea could be obtained of its effect on human tumours. It was impossible to think of the Stockholm technique as one that dealt effectually with extensions of the primary growth. An interesting feature of the development of radium therapy was the reduction of the intensity used in the tubes. Strong tubes had given very bad results. The reaction was very much more favourable when small intensities were given for a long time, because dividing cells were more vulnerable to radiation than cells in other phases. Radiation did two things: it acted on the dividing cell so that the daughter cells were abnormal and did not grow into mature cells, and it prevented growing cells from reaching the stage of division. If the radiation were not carefully planned for its purpose the malignant cells would reassert themselves in the course of time.

Discussion.

Mr. DUNCAN FITZWILLIAMS felt that curietherapy was at present in such an early experimental stage that no dogmatic statements were justified. There were three great centres, each carrying out a different but perfectly stereotyped technique, and it was difficult to get anyone to experiment with unknown possibilities. As things were, radium was more abused than used, and more was to be learned from failures than from successes. He feared a commercial exploitation of radium which would make things much worse.

Dr. J. DOUGLAS WEBSTER showed a number of slides which illustrated successful radium treatment of malignant cases and various methods of technique. He referred to the grave danger of radium burns, and said that large doses should be applied from a distance of 4–6 cm.; this gave more effect on the depth and less on the surface. He commented on the conflict of opinion about the different effects of different wave-lengths in different parts of the body, and the various techniques used to protect the areas of secondary spread in mammary cancer. In his experience failure was usually due to faulty technique in dosage. It was absolutely necessary to examine the patient every three months for five years and to treat recurrences promptly. Dr. Webster urged the necessity of further research, particularly into the technique of application, and the exploration of new methods.

Sir JAMES DUNDAS-GRANT said he had been impressed with the extraordinary relief afforded by radon to patients with cancer of the œsophagus and larynx. He said he had also been much impressed by the results of X rays in laryngeal carcinoma, describing several cases. He thought that operation followed by X rays was coming into vogue.

Mr. ARTHUR EDMUNDS said that no speaker had tackled the three problems propounded by Mr. Pinch. He would do a radical operation on the society woman and send her to a firm of corset-makers to be fitted with a suitable substitute for the lost breast. He would do a complete dissection of the glands of the neck of the tongue case and insert radium.

Mr. WILLIAM GILLIATT, speaking of Mr. Pinch's first case, said that endocervical carcinoma was seldom diagnosed in the consulting room. It always extended very much further than the manual examination would suggest. Radium was nowhere more useful than in gynæcological practice. Preoperative irradiation was nearly always beneficial; it caused disappearance of hypertrophic growths and healing of ulcerative growths, and greatly diminished the risk of the post-operative sepsis which caused the death of many Wertheim cases. There was a potent individual factor in the reaction to radium.

Dr. C. E. LAKIN preferred radium to X rays for splenomegalic leukæmia; it seldom caused constitutional disturbance, whereas prolonged deep X rays might make people really ill.

Reply.

Mr. PINCH, replying, proposed that one meeting each year should be devoted to a discussion of radium failures and mistakes; the results would be of great importance. There was no one technique in radium treatment; it was in a state of flux. Everyone must work intelligently, record successes and failures, and have the results collated and scientifically analysed after five years. He thought that personal idiosyncrasies played a larger part in gynæcological cases than in general surgery.

ABERDEEN ROYAL INFIRMARY.—By means of a special appeal, Sir Andrew Lewis, Lord Provost of Aberdeen, recently raised over £400,000 for the erection of a new infirmary. It is now stated by the board of directors of the institution that, in consequence of altered plans and increased estimates, the cost of the work will be £600,000.

ROYAL SOCIETY OF TROPICAL MEDICINE.

TROPICAL MEDICINE AT THE TURN OF LAST CENTURY.

IN his presidential address to the Fellows on Oct. 18th Dr. G. CARMICHAEL LOW passed in review the gains to tropical medicine made between 1894 and 1914. He recalled how, at the turn of the century, a brilliant company of explorers in the new world of tropical pathology opened up by Patrick Manson rapidly extended and consolidated his pioneer observations of the part played by insects in carrying disease.

Malaria and Mosquitoes.

Manson left Hong-Kong in 1889. He had retired from practice and gone to live in Scotland, but the great depreciation of the Chinese dollar in 1890 brought him back to practice again and to London. Here, four years later, Ronald Ross sought him out. In Bangalore in 1889 Ross had studied malaria, but failed to confirm Laveran's discovery of the malaria parasite. Manson now showed him the parasite and withal explained his famous mosquito-malaria hypothesis which had been born of and fostered by his pioneer work in Amoy in 1877 on the development of the embryos of *Filaria bancrofti* in the tissues of the mosquito. In 1894 the predominant opinion was that "flagellation" of the malaria parasite signified, and was the product of, the parasite's death and disintegration. Manson taught the contrary: "Since the flagella appear only when malarial blood gets outside the body," he said, "their purpose must be to continue the life of the parasite in the outer world . . . for the purpose of infecting mosquitoes which suck the blood of patients." This was a chain of reasoning from which Ross found it impossible to escape; and in the upshot, on returning to India in 1895, he, for his part, began those researches which eventually justified the hypothesis that malaria was transmitted by mosquitoes. But before this historic achievement MacCallum, in 1897, settled all controversy about the exact nature of the "flagella" by showing that they were microgametes. On August 20th and 21st, 1897, Ross, in Secunderabad, made an important discovery. In the stomach of two "spotted-winged mosquitoes," bred from larvæ and fed on a patient with malaria crescents in the blood, he found certain cells containing pigment granules indistinguishable from those seen in malaria parasites; and a month later he found like cells in another species of anopheles—also bred from larvæ and fed on malarial blood. This shining discovery Ross reported promptly to his chief in the Madras Presidency; and now, with the solution of the great problem in his grasp, he was given urgent orders to proceed at once to Rajputana where the dry cold weather put an end to mosquito work. At this juncture Manson interceded with the India Office in London, with result that in January, 1898, Ross was placed on special duty for six months to continue his malaria research. He arrived in Calcutta in the following February, but now armed with MacCallum and Opie's proof that the crescents were sexual forms and not special "sporulating" ones. Human malaria was scarce in Calcutta, so, acting on Manson's suggestion, Ross turned to the malaria of birds, and here found material in plenty. In March he had tracked down the species of mosquito capable of carrying the malaria parasite of birds, and within a few more weeks had traced step by step the cycle of the parasite's development in this mosquito. In July, 1898, he telegraphed to Manson, who announced the discovery at the British Medical Association meeting in Edinburgh at the end of that month. But the "mugwumps" had not finished with Ross; again and quickly he was forced to discontinue malaria work. He was sent to Assam to investigate kala-azar, and thus, said Dr. Low, it fell to Grassi, Bignami, and Bastianelli, in Rome, to verify the great discovery for human malaria. This would not have been done at the time but for Ross's work—the Italian researches followed his, and were not independent of them.

Manson's Later Work.

In July, 1897, Manson was appointed Medical Adviser at the Colonial Office. His influence appeared in March, 1898, when the Secretary of State for the Colonies, Joseph Chamberlain, issued the first of his letters to the General Medical Council, the medical schools, and the governors of tropical colonies, urging the need of special instruction in tropical diseases. These letters led directly to the founding of the schools of tropical medicine in Liverpool and London before the end of the century—a lead since followed by many nations. In 1877 Manson, in Amoy, discovered the nocturnal periodicity of the embryos of *F. bancrofti* in human blood, and followed this up by showing that the embryos developed and underwent a metamorphosis in the thoracic muscles of the mosquito *Culex fatigans*. He surmised that the mosquito then died in water; the metamorphosed embryos escaped into the water, and through this medium entered man.

In 1899 Manson set Dr. Low the task of examining by serial section a number of mosquitoes which had fed on the blood of filarial human patients, and been kept alive for varying periods afterwards. They had been sent to Manson by Bancroft in Australia. In the heads of some of the mosquitoes, 12 to 20 days after feeding, metamorphosed embryos were found, and at first taken to be just aberrant wanderers. In March, 1900, a section was examined which had taken in the whole length of the proboscis—and there, lying along it, were two completely metamorphosed embryos. When it was shown to Manson he exclaimed: "If only I had known this before my mosquito-malaria theory—how it would have helped me!" The ball had been set rolling, and fast. In 1900–01, Read, Carroll, and Lazear demonstrated in Havana that yellow fever was transmitted by the mosquito *Aëdes egypti* (*Stegomyia fasciata*). Lazear himself was bitten by one of these infected mosquitoes and died of yellow fever. The first and still the greatest triumph in practical prevention of tropical disease, the direct outcome of these discoveries, soon followed. Havana was completely rid of the secular scourge, and Gorgas was now armed with the knowledge which he expressed in the sanitary control that made possible the digging of the Panama Canal—where once malaria and yellow fever had signally defeated de Lesseps.

ROYAL SOCIETY OF MEDICINE.

SECTION OF UROLOGY.

UROLOGICAL STATISTICS.

AT a meeting held on Oct. 24th Mr. FRANK JEANS delivered his presidential address on Urological Statistics as a Criterion of Progress. He questioned the conclusions to be deduced from figures, because clinical surgery was not exact enough to be reduced to numbers. Medicine was a science, surgery an art, and general practice an inspiration. The essential to interpreting statistics was the realisation of the inconstant factors, which far outnumbered the constant factors. The constant factors were few. They were:—

1. The name of the disease, but even this was subject to differences in nomenclature.
2. The age of the patient.
3. The sex of the patient.

Beyond this the factors became more vague. They were:—

1. The duration of the disease; this figure, if given in weeks or years, ignored the fact that one man in a week may become as ill as another man in a year—the old fallacy of the fourth day appendix.

2. The presence or absence of sepsis. This was difficult to measure, though in the war it had been roughly done by counting organisms in a microscopic field.
3. Concomitant diseases independent of obstructive urinary lesions.
4. The temperament of the patient; this frequently had determined the question of operation.
5. The weather. Kocher the elder said: "Never do a thyroidectomy on a foggy day."
6. The surgeon who does the operation, or in "pooled" statistics of various hospitals, a mixture of surgeons of very varying ability and skill.
7. The stage of the surgeon's career. Was it done when he was at the height of his daring, or at the height of his efficiency, or at the height of his fame? These were all peaks in the curve at different points in a surgeon's career (and in the careers of actors, violinists, and vocalists). A block of statistics from each of these three periods might or might not yield the same mathematical results as a block from the whole period of his career, but would be clinically different.

Certain factors that ought to make results better were considered by Mr. Jeans.

1. *Asepsis.*—Nothing had been added to the technique of the theatres at the Royal Infirmary, Liverpool, which was as perfect 25 years ago as is to be seen in any theatre to-day.

2. *Anæsthesia.*—It was true we had greater experience of a larger variety of methods, but it was only the increased choice that helped us to select the right method.

3. The greatest influence was increased knowledge of the *efficiency of the kidneys*, and therefore the knowledge when to operate. Many men were alive to-day because they had had preliminary drainage before prostatectomy.

There was one factor, not often mentioned, which might make the results of urologists look worse on paper, and that was the decentralisation of surgery, first from London to the big provincial cities, and later from them to smaller towns. The result of this was necessarily that the pure surgeons and the pure urologists, whether in London or in the teaching provincial schools, were getting a far higher proportion of difficult cases, the ordinary easy ones being done, selectively, by surgeons who were also general practitioners. Specialised experience therefore became qualitative as well as quantitative. Had a deep interest in one's own statistics any moral or immoral influence upon a surgeon's decision to operate upon a desperate case? Theoretically it had none; but surgeons were, after all, human. Impressions after the age of 40 were more valuable than statistics, always provided that the surgeon had not had the disease himself. Personal experience was graphic but misleading.

The results of urinary surgery had undoubtedly improved enormously, but it was difficult to prove this by figures. One should continue to aim high, but one had to choose between two poetical views—Shakespeare's "Striving to better oft we mar what's well," and William Watson's "To keep in sight perfection and adore the vision is the artist's best delight."

SECTION OF EPIDEMIOLOGY.

THIS Section met on Oct. 25th, with Dr. F. E. FREMANTLE, M.P., the President, in the chair, when a paper on

MODERN ASPECTS OF THE EPIDEMIOLOGY, PREVENTION, AND TREATMENT OF MALARIA

was read by Dr. S. P. JAMES. Malarial mortality, he observed, had decreased enormously in the last 100 years in North Europe, though chiefly because so many deaths were formerly ascribed to malaria in error. Deaths from this cause did, however, still occur in England, and in the same districts as were formerly reputed malarial. Why were they so few, when anopheles were as prevalent as he had found them? Were the feeding habits of these mosquitoes changing? Great social improvements, better food and better housing had limited malaria, but there were still places eight miles from a doctor, with bad houses, unceiled roofs, and no drainage, and to get rid of malaria in England better housing was of the first importance. Speaking of general paralysis, Dr. James mentioned a case infected with benign tertian in September but showing no reaction till a characteristic attack came on in April, a strikingly long incubation. He showed excellent photographs of a charcoal-burner's hut, a perfect mosquito trap, and of other houses in England in which mosquitoes had harboured and carried infection.

Sir MALCOLM WATSON said they had had good housing in Malaya but they had not got rid of their huge malarial death-rate till they had drained their areas. Drainage was required to destroy the larvæ of carrier species while they were together before they had turned into mosquitoes. People not living in the tropics could hardly appreciate the effects of tropical malaria which had depopulated great cities in Ceylon. Problems of malarial control were unending. He spoke of a district where the river had been embanked to avoid floods, and malaria had thereafter become worse, the floods having in the past carried away the larvæ in mass, while now these remained on the spot.—Dr. PHILIP MANSON-BAHR insisted on full use of quinine to prevent patients becoming carriers.—Dr. GORDON THOMSON said drainage and housing were both needed. People were mostly infected in their houses as Dr. James had said, and many bites were needed, for only 1 per cent. of mosquitoes were infected.—The recent reduction of malaria in the army in India through screening of barracks was mentioned with appreciation.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

(*Continued from p. 880.*)

SECTION OF HISTORY OF MEDICINE.

IN a paper entitled

JOHN DALTON—EXPERIMENTAL PHYSIOLOGIST AND WOULD-BE PHYSICIAN

Dr. E. M. BROCKBANK, President of the Section, gave an account of the early life of the founder of the atomic theory as a schoolmaster at Kendal. Dalton had expressed in letters, two of which were published for the first time, the wish to become a physician. Having been discouraged by his relatives from entering the medical profession, he accepted an invitation to go to Manchester as teacher of mathematics and natural philosophy at the academy of that town. He remained there for about six years, and during that time used to discuss with the social reformer, Robert Owen, various religious and scientific topics, including his then undefined atomic theory. He soon became a member of the Manchester Literary and Philosophic Society, which was mainly composed of medical men, and took an active part in its proceedings. As the title of his papers showed, Dalton paid considerable attention to important physiological subjects to which he had been attracted by his interest in medicine. His contributions included papers on colour vision, the mind and its ideas and affections, respiration and the causes of animal heat, the effect of atmospherical pressure on the animal frame, and the quantity of food taken in health compared with the amount of the secretions during the same period. Dr. Brockbank concluded by giving some personal details relating to Dalton's dietetic habits, his colour-blindness, and his susceptibility to lead. His death, which took place in 1844, at the age of 78, was due to cerebral hæmorrhage.

Sir D'ARCY POWER read a paper entitled

Surgeons Who Were Never Surgeons.

By this he meant persons who had taken or obtained the degree of F.R.C.S. Eng., but had never practised

as surgeons, and apparently had never intended to do so. He gave short biographical notices of such men. First amongst them was Richard Robert Madden, who became a Fellow in 1855. He was intimate with Lady Blessington's circle, and became a friend of Lord Byron and Count D'Orsay. He was a special correspondent in Lisbon for the *Morning Chronicle*, and was Colonial Secretary in Western Australia. William Guybon Atherstone—F.R.C.S. in 1863—was in danger of being forgotten in this country, but he did invaluable service in South Africa, where he made straight the paths for Cecil Rhodes. He advocated the Cape to Cairo railway, desired to see the telegraph carried overland, recognised the first diamond brought from Kimberley, and became a member of the Legislative Council in 1884. Robert James Stone left England for Natal as Superintendent of Education, became a meteorologist, and organised the scientific apparatus at the South Kensington Museum in 1876. George Redford—elected F.R.C.S. in 1869—was registrar of the Crystal Palace collection of sculpture, and devoted his life to the care and description of works of art. His son, George Alexander Redford, was well known as the official examiner of plays. The Bishop of Labuan—Dr. Francis Thomas McDougall—seemed to have been the only bishop of the English Church who passed the examinations and was admitted a Fellow of the Royal College of Surgeons of England. He was an eminent Churchman, a good doctor, and a first-class fighting man. Alfred Smee had the post of surgeon to the Bank of England specially made for him that the Bank might retain his scientific services. He invented "Smee's battery," a durable writing ink, a method of printing cheques and notes, and rendered it impossible any longer to split bank notes. He was, too, a physiologist interested in the electrical parts of the science, and had he still been alive would have been amongst the foremost electrical engineers. Whilst he was still a student he invented the "gum and chalk" splints, which were superseded by plaster-of-Paris, which in turn were replaced by celluloid.

Dr. T. WILSON PARRY (London) read a paper illustrated by lantern slides on

The Stimulus given by Religion to Surgery during the Third Epoch of the Neolithic Period.

He showed that during that period the operation of craniotrypesis (holing the cranium) was performed on the living human skull in order to facilitate the departure of demoniacal spirits. The dead were then buried in dolmens, so that these events could be accurately dated. Large numbers of holed skulls recovered from dolmens could be seen to-day in public and private museums in different parts of France. There were, however, only two skulls on record which could have been in any way dealt with for morbid conditions. It was clear that the religious operation for the setting free of evil spirits was performed first, and later opportunity was taken by the experience thus gained to correct pathological conditions, thus giving a start to cranial surgery, which otherwise would doubtless have been kept back for many centuries. Dr. Parry showed how a skull exhibiting evidence of the ritualistic operation could be differentiated from other holed skulls of prehistoric origin, and pointed out that it was entirely due to the spiritual conditions of that day, which necessitated a surgical procedure for the cleansing of the individual from evil spirits, that cranial surgery took its origin.

In a paper on

James Braid

Dr. GEORGE FLETCHER (Manchester) stated that details of Braid's life were scanty, and his writings were now very scarce. He was born on June 19th, 1795, at Ryelaw House, in a part of Fifeshire which was afterwards transferred to Kinross-shire by the Boundary Commissioners. He was qualified at Edinburgh in 1815, and in 1826 came to Manchester, where he died on March 25th, 1860. He had little connexion with official medicine at Manchester. He was not on the infirmary staff, nor was he a member either of the Literary and Philosophical Society or of the Medico-Ethical Association. His advocacy of hypnotism led to his being regarded as somewhat of a charlatan by his more disciplined brethren. He early specialised in the surgery of deformities, and was apparently the first in England at any rate to have performed tendon shortening in paralytic talipes. The demonstrations of a travelling mesmerist led him to investigate mesmerism, and having found something genuine in it he gave lectures in various parts of the country in order to convince the public and the profession of its safety and value. In 1842 he published a pamphlet "Satanic Agency and Mesmerism," in which he replied to the criticisms which the Rev. H. M'Neile had made in a sermon. Next year appeared Braid's chief work, "Neurypnology." In it he defined the meaning of the word "hypnotism," which he himself had coined, and described the phenomena of the hypnotic state and his mode of inducing it. He devoted a large section to the investigation of the alleged phenomena of phrenology, but his results were discordant; in a later essay he repudiated a belief in phrenology. The second part of the volume was occupied by descriptions of cases of disease which he had treated with more or less success by hypnotism. Most of Braid's writings were occasional and controversial in character. He did not live to give a final account of his researches. In his later works he laid less emphasis on fatigue as a factor in exciting the hypnotic state, and recognised the rôle of suggestion in its induction, control, and therapeutic application. He did not, of course, discover that state, nor was he the first who contended that it was wholly subjective in character. His great merit lay in the fact that he stripped mesmerism of its baseless and occult extravagances, and reissued it in the form of hypnotism for the service of the physician and the psychologist. The subsequent development of hypnotism in France and elsewhere was largely the outcome of his labours. Braid's interests were not confined to hypnotism, which he employed only in the minority of his patients. The use of arsenic in trypanosomiasis was due to a suggestion which he made to Dr. Livingstone. He performed a Cæsarean section in 1847. Sanitary matters occupied his attention, and he kept in touch with natural history during his Manchester life.

Dr. E. BOSDIN LEECH gave an account of

Charles Harrison Blackley (1820–1900).

Blackley was a pioneer in hay-fever research, who, according to Dr. Leech, had not had sufficient recognition for his researches and discoveries. He took up medicine when 35 years old, and spent the remainder of a long life experimenting on the cause and treatment of the disease from which he himself was a sufferer. His work was all the more praiseworthy since he was a general practitioner with a large practice, and a really successful experiment on himself meant that he was incapacitated from work for the day. He was the first to prove definitely that pollen was the cause of the trouble, and that though grasses were the most frequent cause, still the pollen of other plants brought it on in varying, though definite, degrees. Others had surmised; but he experimented and proved. His ingenuity in devising apparatus, both for judging the effects of pollen and preventing it reaching the nasal mucous membrane, was very great. He practised in Manchester, so that the meeting was a suitable one for recognition of his work. Up to the present his fame was chiefly in America, where his work was more appreciated than at home.

WARMINSTER COTTAGE HOSPITAL.—Last week the Marquess of Bath, who gave the site, opened a new cottage hospital at Warminster. The old building, which has been in use for 63 years, was originally a farmhouse. The wards are all on the ground floor and one of them is named after Dr. R. L. Willcox, who has for many years been associated with the hospital.

Reviews and Notices of Books.

THE EXTRA PHARMACOPŒIA OF MARTINDALE AND WESTCOTT.

Nineteenth edition. Revised by W. HARRISON MARTINDALE, Ph.D., Ph.C., F.C.S. Vol. II. London: H. K. Lewis and Co., Ltd., 1929. Pp. 759. 22*s.* 6*d.*

A NEW edition of the second volume of the Extra Pharmacopœia appeared last week, and represents the results of four years' work; the first volume was issued a little over a year ago, and in its sequel Dr. Harrison Martindale has exercised similar care in the revision and arrangement. How necessary this is he points out in some prefatory words, reminding us of the overwhelming bulk and character of the scientific literature of to-day. This fact militates against the conciseness for which the Extra Pharmacopœia is famous, and the author is to be commended especially for one direction in which he has secured the invaluable quality—some of the relatively old material is purposely retained while references are given to newer views, perhaps destined to supersede existing ones, but still needing confirmation. In such cases the reader is directed to previous issues of the Extra Pharmacopœia for information as to the omissions made necessary in order to avoid overloading. As a matter of fact Dr. Martindale has managed to abstract with brevity and precision much of the world's literature germane to his objects, and, as showing the extent to which the compilation is up to date, it may be mentioned that several articles which were published in our issues of Sept. 29th and Oct. 5th of this year have been laid under contribution.

The first volume of the Extra Pharmacopœia is concerned chiefly with information upon the clinical use of chemicals and drugs, their characters, dosage, and methods of prescription, while the present volume sets out developments in investigations, details of experimental research, and certain machinery for diagnosis. One matter among many dealt with by laboratory investigation is mould inhibition by means of various preservatives, a complication which has constantly given practical anxiety in the preparation of pharmaceutical products and foodstuffs generally. An equally important section from the public point of view deals with the antiseptic powers of various chemicals. This chapter is particularly informatory, while it makes pleasant reading for ourselves because stress is laid upon the value of the work of the late S. A. Vasey, which was done at the instigation of THE LANCET and which, with modifications, has been employed in these investigations. Dr. Martindale points out that while there is in this country an inclination to discredit disinfectants as weapons against the germs of disease, the reason of this may be that under the Act of 1908 any useless preparation may be sold to the public without proof that it contains, for example, high germicidal power, that it makes or forms a due emulsion with water, and that it is not affected to a mischievous degree by temperature. The importance of distinguishing antiseptic action from germicidal power is pointed out, and a list of the more potent antiseptics arrived at by recent experiment is given alphabetically, with details of the researches. The information in these pages is of the first practical value.

Another section that will be immediately consulted is that dealing with milk analysis. We have here a résumé of the various Acts of Parliament, regulations, and official publications through which it is endeavoured to secure that the public obtain a milk of good quality and average chemical composition. The grading of milk is clearly dealt with, and the bacteriological standards of the various grades are given, as well as an explanation of the tuberculin tests in cattle, special reference to intradermal tests being added. The notes on the pasteurisation of milk are full, and we may commend the impartiality with which the views on a vexed subject have been collated. The author puts forward a suggestion which we believe is novel—namely, that the consumer might be supplied with milk refrigerated on the farm and delivered to him within a few hours of milking in thermo-isolated vessels. His proposal is backed by experiment, and he may be congratulated upon an idea which could be realised practically by the provision of cheap thermos flasks, which must also be strong and returnable.

The scope of the Extra Pharmacopœia, through the successful dispersal of many large editions, is familiar to all our readers; it remains to say that this addition to the series is, like its predecessors, a clear and authoritative publication, of the highest value to all medical men, and indispensable to many of us.

THE TRAUMA OF BIRTH.

By OTTO RANK. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1929. Pp. 224. 10*s.* 6*d.*

IT is agreed by psycho-analysts that what may be either memories or fantasies of birth play a part in the genesis of pathological anxiety and commonly emerge in the process of analysis, though to anyone not analytically minded the existence of the actual memory in the unconscious is not easily credible. Otto Rank, a Viennese analyst of repute, finds that the unconscious is right "where we have dared to follow it only hesitatingly and incredulously," and that in a number of cases the patient repeats his own birth for the most part quite faithfully in all its details. From this starting-point Rank explores the worlds, of myth, religion, art, and philosophy, finding everywhere proof that the primary trauma of separation from the mother underlies their development and manifestations. Without rejecting his original observations we may doubt whether he has done more than other single-minded enthusiasts who, exploring the same worlds, have found evidence for their own theories of human development, and we turn more expectantly to the medical implications of his proposition. He shows in his early chapters a fault common in psycho-analytical writings—perhaps due to the lack of the discipline of effective criticism—for it is sometimes difficult to distinguish established observations from deductions or mere obiter dicta. A statement on page 28 is startling in its non sequitur, when we read that the fact of the newly hatched young of a Cichlid fish taking refuge at night in the throat-pouch of the mother "proves that physiological sleep throughout the animal kingdom is a temporary return to the mother's womb." The writer should not thus make more difficult the task of giving impartial consideration to views that, as psycho-analysts freely admit, inevitably arouse opposition. The fault becomes less apparent in later chapters, as if the one frankly headed "Philosophic Speculation" had enabled the author to sort out his material and prepare the way for his lucid discussion of psycho-analytical knowledge and the therapeutic aspect. He has already claimed (page 4) that his analyses are comparatively short and now he boldly presents the opponents of analysis with the admission that he considers analysis is now in a position to free itself to an extensive degree from the work of investigation (that is, we assume, in the individual case) and to sever the Gordian knot of the primal repression at one cut, thus rendering the analytical process easier and quicker. It is for his fellow workers to decide how far this departure from accepted technique will be approved; his discussion shows an appreciation of the difficulties and limitations of therapy.

From the analytical point of view the book is important inasmuch as it deposes the Œdipus motif from its central position and makes it secondary to the birth experience. Erasmus Darwin, describing the reactions of the child at birth, suggested that the sensations then experienced might serve as the prototype of fear throughout life. By those who accept their observations the possibility of this biological

memory on the part of the organism will be confirmed by Rank and his colleagues, who attempt to show that the experience is actually conserved in the unconscious and is accessible to their methods of approach. The book is obviously intended only for those who have already travelled far along the same path as the author, and for them it should be full of interest.

AFTER-TREATMENT OF OPERATIONS.

Fifth edition. By P. LOCKHART-MUMMERY, F.R.C.S. Eng., M.A., M.B., B.C. Cantab., Senior Surgeon, St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum. London: Baillière, Tindall and Cox. 1929. Pp. 281. 7*s.* 6*d.*

THE appearance of a fifth edition is sufficient evidence that this book has proved of great value in the past. It has provided house surgeons and practitioners with just the kind of information about after-treatment that they need, and has given them details of the complications they may expect to meet and of the ways to deal with them when they arise. Unfortunately, in spite of the assurance in the preface that it has been brought up to date, that part of modern practice which is based on new knowledge is not given adequate prominence. For example, we can find no word about massive collapse of the lung, probably the commonest of the important pulmonary complications of operations. In the section on thyroid operations and their after-treatment iodine is not mentioned, while in that on pulmonary embolism and its treatment the word morphia does not occur. The article on surgical shock contains no account of histamine and its action; and while the statement on p. 96 of the same article that "the only form of transfusion which is permanently effective is human blood" is no doubt merely the author's somewhat dogmatic way of saying that a colloid solution remains in the vessels longer than a crystalloid one, gum solution has surely proved of sufficient value to be worthy of mention. In the discussion of the likelihood of gangrene if the main artery of the limb is ligatured for secondary hæmorrhage, no note is taken of the valuable war experience that simultaneous ligature of the vein materially lessens the risk. Finally, the insertion of a drainage-tube after the radical cure of hydrocele is not generally considered necessary.

That the radical of to-day is the conservative of to-morrow is a commonplace of politics, and although Mr. Lockhart-Mummery is justified in claiming credit for having advocated the shortening of the bed-period after the simpler abdominal operations from the three weeks of long ago to ten days, yet this period is now considered unnecessarily long by many surgeons. A few misprints need correction, such as "arthritis" on p. 54, where "arteritis" is meant, and "internal appendix" instead of "interval appendix" on p. 124. The book is written in a readable if somewhat dogmatic style, and it is only because it contains so much valuable information that it seems worth while to call attention to the need for incorporating some of the recently acquired knowledge which has been overlooked.

ANATOMY AND PHYSIOLOGY OF CAPILLARIES.

By AUGUST KROGH. Second edition. New Haven: Yale University Press; London: Humphrey Milford, Oxford University Press. 1929. 101 text figures. Pp. 422. 18*s.*

SINCE the first issue of this book in 1922 general interest in capillaries has much increased and a good deal of fresh and important work has been done, no doubt stimulated for the most part by the book itself. Specially notable are the researches of Landis on the quantitative measurement of skin permeability and of Lewis and his co-workers on the reaction of the skin to injury. Of these Prof. Krogh takes very full notice in this revised edition which in other ways as well is to a large extent rewritten. As before, it has the characteristics of its author. He is anxious everywhere to get some sort of quantitative idea of what is going on and to what extent, accurate if possible, but he shows over and over again that rough approximations are better than nothing at all. And he is not afraid of his imagination. What makes the book such good reading (which it certainly is) is not so much what he tells us as known, but his suggestive comment on what might be found out. He accepts Rouget cells as elements in the capillary wall of proved individuality, responsible for changes in calibre. And naturally a great deal of attention is given to Lewis's H-substance, though it does not seem to have occurred to Krogh that the phenomena of inflammation consequent on a clean aseptic skin wound have for many years been recognised as proving by exclusion that inflammation may be caused by the products of cell injury. Nor does he appreciate when he comments on the extreme whealing activity of the "poison" of the mosquito that this is an anaphylactic reaction which fits quite elegantly into the histamine saga.

DERMATOLOGY.

Précis de Dermatologie. Fourth edition. By J. DARIER, Médecin hon. de l'Hôpital Saint-Louis; Membre de l'Académie de Médecine. Paris: Masson et Cie. Pp. 1102. Fr.100.

FROM its first appearance in 1908 this work has occupied a distinguished position among dermatological text-books, and has been translated into four foreign languages. The collection of material and the preparation and selection of suitable illustrations for an up-to-date dermatological text-book is a task demanding not only much labour and time but also a comprehensive knowledge of current literature. Dr. Darier has given all of these freely, and has been in a position to enrich his book by accounts of his own classical contributions to the science of dermatology. The publishers have made a list of these in an appendix. This list reminds us that it is mainly to Darier that we owe the recognition and classification of the tuberculides, while his work on the sarcoids has justified the inclusion of a special type under his name (Darier-Roussy), while dermatologists all over the world speak of Darier's disease when referring to the condition which he has modestly called "psorospermose folliculaire végétante." Darier's more recent contribution to the histology of cutaneous epitheliomata goes far to explain the relative malignancy of the various types, and deserves more consideration than it has yet received from surgeons and radiotherapeutists.

In the augmented fourth edition of his text-book he has thoroughly modernised and largely expanded the sections on urticaria, eczema, parasitic and mycotic infections, &c., and has added a new chapter on diseases due to filtrable virus—e.g., herpes zoster—and another on dermatoses of autotoxic origin—e.g., prurigo and pruritus. The text throughout is brilliantly composed and arranged, and the sections on eruptions will stand as masterpieces of clinical phraseology. To read them is a relaxation rather than a labour, and so simple is the choice of words and idiom that a dictionary will seldom be required, even by those who do not read French easily. The one blot on the work is the old-fashioned method of reproducing the excellent illustrations and the absence of coloured plates.

THE MYSTERY AND ART OF THE APOTHECARY.

By C. J. S. THOMPSON, M.B.E. London: John Lane, The Bodley Head, Ltd. 1929. Pp. 287. 12*s.* 6*d.*

LAST year Mr. Thompson, who is honorary curator of the Historical Section of the Museum of the Royal College of Surgeons of England, gave us a valuable historical study of the quacks of old London. He now tells the history of the apothecary from the earliest times, tracing his subject from Assyrian, Egyptian,

Greek, and Roman and biblical times, through Arabian medicine and the Middle Ages, down to the end of the eighteenth century. Physicians at first dispensed their own drugs, and the custom of the apothecary dispensing for the physician appears to have been started in Rome. There is an interesting chapter on the three oldest remedies in the world: hiera picra (holy bitter), terra sigillata (sacred sealed earth), and theriaca (treacle). The first mention of an apothecary in England by that name is on the Pipe Roll for 1180, when Henry II. was in Ireland. An apothecary was Mayor of York in 1273. The apothecaries were originally associated with the pepperers, who in 1328 became the grocers; they did not split off into a company of their own till 1606. Mr. Thompson gives the results of much research on the ancient printed books on drugs and on the later pharmacopœias; and he brings out the fact, which is also mentioned in Mr. Francis Hackett's recently published study of Henry VIII., that this monarch dabbled in drugs, especially ointments, when not otherwise engaged. He notes, too, the habits of one Jessup, a grazier, who died at Lincoln in 1814, from which it has been calculated that in 21 years he swallowed 226,934 pills and drank 40,000 bottles of mixture; this is worse than Mrs. Pullet's record in "The Mill on the Floss." Specimens of apothecary's bills indicate that their charges were certainly high. There is a learned chapter on the druggists' carboys, which delight small children to this day in chemists' shop windows, and the queer symbols found on them. We could have wished that a chapter on the old jars, of which fine collections exist, had been included. The book is well printed and illustrated, and we have observed very few errors; William Linacre (p. 135) should surely be Thomas Linacre, and Vindax Ariovistus's Roman oculist stamp (p. 30) was found, not at Winchester, as stated, but at Kenchester, near Hereford.

STANDARD TREATMENTS IN THE TROPICS.

The Use of Standard Treatments in the Campaign against Disease in the Tropics. By J. NEIL LEITCH, M.D., M.R.C.S., L.R.C.P., D.T.M. & H. Pathologist, West Africa Medical Service. With an introduction by Dr. G. CARMICHAEL LOW. London: H. K. Lewis and Co. 1929. Pp. 64. 6*s*.

THE object of this essay, which was accepted as a thesis for the doctorate of medicine in the University of London, is praiseworthy. It is to advocate standardised methods of treatment for certain tropical diseases which prevail in Assam, where the author has gained his experience and where medicine is largely a problem of mass treatment. Standardised treatment is here advocated for malaria, amœbiasis, kala-azar, hookworm, and cholera. The various methods of treatment and the dosage and spacing of drugs do not differ materially from those given in most standard text-books, but to have them so succinctly set forth will be helpful to medical officers in charge of native labour. "*Quot hominis tot sententiae*"—that fine spirit of independence in medicine—still militates against universal standardisation, however, and will even survive misquotation in the introduction.

EYE STAINING.

Vitale Färbungen am Menschlichen Auge. By Dr. O. KNÜSEL (Aarau) and Dr. P. VONWILLER (Zürich). With 10 coloured plates and 36 figures in text. Berlin: S. Karger. Pp. 130. M.12.

THIS book is the joint work of a Swiss ophthalmologist and a Swiss anatomist, who for the last five years have been working at the subject. The methods of staining living tissues have been much improved of late years. By means of methylene-blue, neutral red, and brilliant Kresyl blue, in solutions of appropriate strengths, the cornea and conjunctiva, both of animals and of man, have been stained during life, so that by means of the slit lamp and corneal microscope their intimate structure can be displayed. The results of the use of this method are here depicted in a series of some 60 coloured drawings. These demonstrate, among other things, a granular structure of the corneal epithelium and endothelium caused by the staining of the living cells—lymphatics, nerves, and nerve-endings—in the conjunctiva and the relationship of these to the vessels. After a subconjunctival injection the lymphatics are seen to be enormously swollen and shaped like a string of beads owing to the valves. Perivascular lymphatics are also demonstrated. The end bulbs (Kolben) of nerves are very well shown. The authors may be congratulated on having initiated a further stage in slit-lamp technique of which their compatriot, Prof. Vogt, has so far been the chief exponent.

THE HARLEY STREET CALENDAR.

By H. H. BASHFORD. London: Constable and Co., Ltd. 1929. Pp. 272. 7*s*. 6*d*.

IN a modest foreword Dr. Bashford speaks of his "attempt to frame in the setting of their times a few typical figures of English-speaking medicine." He has certainly succeeded in supplying admirable short accounts of the lives of some of the most celebrated British doctors. He writes pleasantly and easily of Gilbert the Englishman, John of Gaddesden, Thomas Linacre, William Harvey, Thomas Sydenham, Hans Sloane, John Hunter, Edward Jenner, James Young Simpson, Joseph Lister, and William Osler; and it is clear that each study is based on a sound historical background. From a chronological point of view the subjects of the essays cover the period between the twelfth and the twentieth centuries. Each chapter supplies a happy blending of personal details of biography, with the flavour of the times in which these famous men lived and worked, and the result is a fascinating book which is not easily put down unfinished.

THE SCIENTIFIC EXAMINATION OF PICTURES.

By Dr. A. MARTIN DE WILD. Translated from the Dutch by L. C. JACKSON, M.Sc., Ph.D. Leiden. London: G. Bell and Sons, Ltd. 1929. Pp. 106. 15*s*.

THIS book contains a description of an investigation of pigments used by the Dutch and Flemish masters from the fifteenth century onwards. The contents form the result of much research directed towards the determination of whether a particular picture is genuine or not, and the author claims that certain elaborate methods of investigation will give a definite answer in a large proportion of cases to difficult questions of attribution. Important conclusions can be drawn with certainty from the dates of the discovery of various pigments, as is indicated in a foreword by Dr. F. E. Scheffer, professor of inorganic chemistry at the Technical University of Delft. But it is confessed that to obtain trustworthy results it has been necessary to experiment on pictures, as controls, whose origin was above suspicion. The author asserts that the damage thus done by investigation is so infinitesimal as to be undiscoverable even by the experimenter when once his eye has been removed from the spot where the necessary scratch or puncture has been inflicted, while he describes at full length the elaborate technique from which deductions can be arrived at after analysis of these minute fragments of paint. Similarly, radiology can be made to play a part in detection. The costume of the mediæval doctor has often appealed to painters as of great assistance, and there are many portraits of historic physicians and chirurgeons to which the names of famous old masters are appended when both the painter and the person painted are really doubtful. A new terror will therefore be introduced into the life of many curators if the sticklers for accuracy should demand the use of X rays and test-tubes for the verification of catalogues. Diagnosis is an admirable art, but it is a fundamental clinical maxim that the subject should not be submitted to over-examination.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 2, 1929.

THE RENAISSANCE OF GENERAL PRACTICE.

WHETHER we like it or not, the centre of gravity of medicine is shifting from the home to the hospital and clinic. The first result of this is that the profession will be unable to go on doing its hospital work for nothing and will increasingly demand payment for services rendered in institutions; the second result is a narrowing of the confines of general practice which will ultimately destroy the efficiency of all who are isolated from hospitals. The problem of payment for institutional treatment is being solved on orderly lines in the course of social evolution, but the problem of the private practitioner's isolation presents itself urgently in connexion with the Local Government Act which will come into force in April. It may not be strictly true to say, with one of the speakers at last week's Panel Conference, that this Act will provide hospitals for everybody, from duke to dustman, but it will certainly set free a very large number of beds to meet the public demand. This will have the effect of popularising hospitals still further, and if no attempt is made to bring the general practitioner into their working it will separate him yet more widely from truly general practice. If the family doctor is to look after nothing but minor complaints, if he is to surrender his patient during every illness, if he is to be kept out of the multifarious activities of the public health service, if he is to have no access to special means of investigation and treatment, then he stands little chance of being a good doctor. While very many have these facilities at cottage hospitals and elsewhere, and make good use of them, the majority of medical men are in no direct relation with hospitals. If local authorities choose the easy course and indiscriminately staff all their institutions with whole-time officers, the present opportunity of a renaissance of general practice will be lost—and such an opportunity may not occur again. It was on some such conclusion that the Panel Conference passed a resolution requiring an institutional position for the family practitioner.

But, of course, it is one thing to pass resolutions and quite another to translate them into action. What sort of hospital is the general practitioner to enter, and what is he to do when he gets there? Clearly no one would care to thrust him into the organisation of the great voluntary hospitals, and it may be asked whether he has in fact a function in anything bigger than a cottage hospital. If he has no place in the large institutions under natural conditions, ought we to provide an artificial environment in which he will thrive? Is the family doctor engaged on work of such national importance that he should be protected; or is free trade in medicine ultimately best for consumer and profession alike? These questions will have all sorts of answers in different minds, in different parts of the country, and in different circumstances. Even now we can find object-lessons in plenty if we look for them. There are already poor-law institutions which have pay-beds to which patients can be admitted under the care of their own doctor. There are others in which medical men are encouraged to follow their cases to the wards and consult with the superintendent and his assistants. Others again have coöpted local medical men as members of their consulting staffs; but here they are usually invited in some specialist capacity, and begin to lose their status as genuine general practitioners. This is the process which has given specialists to most of the big provincial towns during the past two generations, for where a man is attached to a large hospital as physician or surgeon he is apt insensibly to become a consultant—or at any rate a "consultoid." In this increasing specialisation some people see the salvation of the practitioner, but Lord MOYNIHAN (as is reported on p. 957) would have us beware of the tendency to put local doctors on the staffs of the new municipal hospitals unless they have the proper credentials. The hope of the medical profession, he says, is that the standards and ideals of the voluntary hospitals will guide and inspire the work of the old poor-law institutions under their new control, and it must be recognised that physicians and surgeons required for them do not at present exist. Lord MOYNIHAN evidently visualises a municipal hospital as developing gradually on the lines of the teaching hospitals, with no one on the staff who is not an F.R.C.S. or M.R.C.P. He agrees, however, that general practitioners should be given greater facilities for keeping in touch with their patients, and for following the practice of the hospitals so as to keep abreast of advances in medicine.

Possibly we shall have to admit that such facilities are the most that can be hoped for. Perhaps it is true that general practitioners when they demand admission to hospitals are asking for the lost opportunities of their youth, which they can never have again. We must beware of thinking that it does not matter what happens to the practitioner of to-day so long as we look after the training and chances of the practitioner of to-morrow. And we are not persuaded that it is impossible at once to bring the family doctor into much closer touch with hospital work. If the so-called salt of the profession is losing its savour, we do not believe it is beyond the wit of man to re-salt it.

LATENT FRACTURES OF THE SPINE.

UNDER this title Médecin-Commandant M. CLAVELIN [1] writes of those minor or overlooked injuries of the vertebræ which have figured more largely in medical literature since the war. The number of violent injuries from explosions, falls of earth, and accidents to vehicles during the war, and the automobile accidents after it, have made this subject more important than it was even 20 years ago, while improvements in radiographic apparatus and technique have made early diagnosis possible where previously it was impracticable. No doubt it would be well if, as CLAVELIN suggests, we were to banish from our case-books such vague terms as contusion of the spine and muscular strain, for nearly always what is called contusion is really fracture, and muscular strain, however slight, involves rupture

[1] Arch. de Méd. et de Pharm. Milit., 1929, xc., 439.

of muscle-fibres, which may be extensive enough to impair the muscular support of the spinal column. Not only may the bodies of the vertebræ be concerned in a crush fracture caused by excessive flexion, but any of the apophyses may suffer, and CLAVELIN has found that these latter lesions are accompanied by more acute and more localised pain than are compression and deformation of a vertebral body. The term "compression fracture" is perhaps not very happily chosen, for by fracture of a bone we usually understand a solution of continuity involving the division of one bone into two or more fragments, whereas a crush fracture of a vertebra consists not in a tearing apart but in a squeezing together of cancellous tissue and consequent alteration of shape of the bone affected. Any regions of the spine may be the site of a compression fracture, but the lumbar region is far more often affected than the cervical, and the dorsal least of all.

Unlike the classical fractures or fracture-dislocations of the spine, with their obvious and grave clinical signs and symptoms, these minor injuries have often been overlooked, especially when other and more grave injuries of the limbs and trunk have absorbed the attention of the surgeon immediately after the injury. But when these have been successfully treated disability may still remain, together with pain referable to the spinal column, which on careful radiographic examination may be found to be due to overlooked injuries. In other cases the original accident may have been comparatively slight; the symptoms may have been attributed to sprain and treated by too short a period of rest; after which instead of disappearing they may become worse, whereupon a more careful and more skilful radiographic examination reveals a definite lesion of bone. CLAVELIN has confined his observations to cases which he has seen for himself or which have been recorded in France. But the subject has not been neglected elsewhere and we may direct attention of students to the work of R. B. OSGOOD on compression fractures and to the discussion on minor injuries of the vertebræ which took place at a combined meeting of the Surgical and War Sections of the Royal Society of Medicine last January. On that occasion Group-Captain H. V. WELLS[2] described typical cases of "latent" fracture—to use CLAVELIN'S term—in which at or soon after the time of injury radiography showed nothing wrong with the spine, but which months later developed symptoms, and radiograms subsequently showed deformity of bone. The surgeons who spoke at that meeting for the most part thought that such deformity was due to morbid processes in the nature of an osteitis—coming on after the first radiogram was taken—a view which was stoutly challenged by at least one radiologist, who refused to accept it until more exact radiographic evidence was forthcoming. CLAVELIN, while discussing late-coming symptoms in minor injuries, does not deal with this syndrome, although he shows among the 24 figures which illustrate his paper, two of "spondylose traumatique" which bear evidence of arthritis deformans of the spine following on injury. However divergent the views held by various clinical observers, there is an unanimous belief in the necessity of skilful radiography (always in two planes), consequent early diagnosis, and early and adequate treatment. This last may be summed up in the Hiltonian prescriptions of physiological rest; but after this rest care must be taken to secure mobility if necessary by breaking down adhesions.

[2] THE LANCET, 1929, i., 335.

THE POSITION OF PSYCHO-ANALYSIS.

AN attempt to place in perspective a book on "The Trauma of Birth,"[1] reviewed elsewhere in this issue, induces some reflections on the present position of psycho-analysis. The arguments of the author, as he himself states, are only possible and intelligible on the basis of the whole body of knowledge that has been gained psycho-analytically about the construction and functioning of our own psychical instrument. The assumption involved invites a general survey of the relation of psycho-analysis and medicine, since either this body of knowledge is a delusion, and books like this are waste paper, or we are ignoring a most important advance in the pathology and therapy of some of the commonest ills of mankind.

Freud's first announcements of his discoveries, over 30 years ago, were received with blank incredulity, and years passed before his ideas began to receive attention, even from a few. Now they are being to a greater or less degree confirmed by an ever-increasing number of practical workers, and they influence our conceptions of neurotic disorders more than is generally recognised. Recently a committee of the British Medical Association was appointed to inquire whether the practice of the specialty is immoral or dangerous; the fact that propriety and usefulness of this sort had been publicly questioned justified this unique inquiry, which resulted in the acquittal of psycho-analysts of evil practice. What this new method of approach can offer to medicine is, however, a question we seem in no hurry to consider. The fact that, if confirmed, it will mark an epoch in the growth of knowledge escapes the observation of many who may thus be losing the opportunity of watching history in the making. An active psycho-analytical organisation certainly coördinates work in different countries, and has published a large mass of observations, theories, and speculations, resulting from work that is evidently laborious and painstaking; but this organisation stands aloof from the general body of medical or scientific thought, and a glance at the history of the psycho-analytic movement suggests that in this aloofness Otto Rank might see the results of a difficult delivery and a stormy childhood. As a possible bridge across the gap we find individual practitioners who make use of analytical teachings in the treatment of psycho-neurotic patients, but these seem to receive little academic encouragement and are denied, or deny for themselves, the title of psycho-analyst. The situation is without precedent. In the controversies associated with the names of Darwin and Lister the opponents came to grips in the scientific arena and reached conclusions. Although the acceptance of evolutionary theory was delayed by emotional opposition, and finally became a matter of gradual absorption, yet in the stormiest times its exponents were not driven from the scientific fold. The unanswerable virulence that expressed itself in our journals some twelve years ago is happily a thing of the past. Yet in London to-day few young men on the threshold of an academic career in medicine would dare to give open adherence to psycho-analytical principles, or even to investigate them practically in a scientific spirit.

For this state of affairs it is futile to ascribe blame in any particular quarter. The historian sees in such situations the play of forces inherent to human nature, and the cases of Darwin and Freud are alike if only because in each of them the world's peace of mind was apparently in danger and man's satisfaction with himself was shaken. The intrinsic qualities of the processes revealed by analysis are held by his followers to be responsible for the determined rejection of Freud's discoveries, and they rightly plead that to make them answerable for these qualities is the negation of science. We may eventually come to acknowledge a debt to those workers who, as we have seen, are content for the present to be isolated from the general current of medical thought.

By that time we shall have answered the questions that arise from the reading of "The Trauma of Birth"—do these things happen, and if so, what is their import to medicine? The nature of the answer to these questions cannot be prophesied. The trouble of investigating psychology from this new aspect should not be minimised or attributed only to its unwelcome message; its exponents are still unable to agree on even the fundamental tenets of the faith. Few of them follow Freud in all his teachings, and it is likely that the pattern ultimately to be woven will be made from many designs which at present seem to clash with one another. Our plea is that in the medical schools some equipment should be given to the student to enable him to follow the developments of Freud's ideas, and eventually to assimilate those which will help him to understand his patients.

Annotations.

"Ne quid nimis."

PRINCIPLES OF PUBLIC HEALTH DEVELOPMENT.

AN ordinary industry, as Dr. J. J. Buchan pointed out in his presidential address to the Society of Medical Officers of Health on Friday last, is constantly reviewing its organisation and making any outlay necessary to improve efficiency, maintain position, increase profits, and diminish expenses. Yet, although the only real capital of the State is the health of its people, this vigorous progressive acumen is seldom seen in the department of public health. The public health is a good business proposition, for it has done more in the past to increase capital and diminish expenses than the most successful industrial venture on record. Despite a chaos of patchwork legislation and great inherent difficulties, the rate of progress in recent years calls, as Dr. Buchan pointed out, for some satisfaction, but he laid down certain principles for the future which should ensure a continuance and amplification of the success already attained. We are still far short of making full use of the knowledge we already have and still more wanting in facilities for research. Every up-to-date industrial concern maintains a research institute; surely the State should not leave the great bulk of research work in health to the self-sacrificing labour of the few and the vicarious generosity of the well-intentioned. Dr. Buchan's first principle was that the protection and improvement of the health of the people should be regarded by the State as an end worthy in itself. Too often in the past public health has crept in behind the skirts of some other work, as, for instance, the public health services under the poor-law, which were no more than a side-line in the relief of destitution. This has been set right, but similar examples still abound, notably in factory legislation. "Despite a succession of statutes and a multitude of orders," said Dr. Buchan, "factory legislation has continuously failed to meet fully the real health needs of the whole body of the employed . . . only some six millions out of sixteen and a half millions of occupied persons come under the Factory Act." He refused, however, to regard the health of the worker as a labour problem to be solved by codification of industrial laws; the health problem is fundamental and the health of the employed must be brought under the Ministry of Health and not under the Home Office. His second principle was that the people cannot be sectionalised; evil conditions in one class, at one age, or in one set of circumstances have comparable evil conditions in very different departments. Health in pregnancy, for instance, must be viewed in relationship to the conditions before and after pregnancy, and the more deeply we inquire into the health of school-children the further do we travel from the school. The third principle was that a central unification and reorganisation of health effort is not in itself sufficient unless it is accompanied by a similar unification and reorganisation at the points of administration. Health work in this country has always suffered, he maintained, from a lack of well-ordered and well-arranged local government areas. The State should permit no consideration of local history, pride, prejudice, or precedent to stand in the way of securing competent machinery of local administration. His final principle was the complete freedom of expression of the professional health officer within his own sphere. To be of any service he must be absolutely free to express his opinion on any matter of health, whether it be lead poisoning among painters or the exclusion of school contacts in infectious disease. Any control of this expression of opinion must come from within the public health service itself, and not from administrators who have not the knowledge to control opinion on such subjects. "In no other kind of public activity," concluded Dr. Buchan, "is there such a solidarity of interest for all the people, and in none is their coöperation and help more desirable." This coöperation depends almost entirely upon the better education of the great mass of the people in matters of health, and for this education the public health officer must rely to a very large extent on the general practitioner, who has it in his power to take the knowledge of hygienic principles into the homes and hearts of the people.

PERNICIOUS ANÆMIA WHICH RESISTS LIVER TREATMENT.

ARE there any cases of pernicious anæmia which will not respond to liver? The general experience both here and in America seems to be that there are not; but Dr. P. Emil-Weil now publishes[1] three cases diagnosed as pernicious anæmia which got no better under modern treatment. The patients all showed severe anæmia with a high colour-index and some leucopenia; in one the spleen is said to have been enlarged. Liver was given, both as whole gland and in the form of extracts; this treatment was supplemented by frequent transfusions of blood; yet no improvement followed, and all the patients died after illnesses of some months. The question naturally arises whether the diagnosis was correct. We have at present three criteria of pernicious anæmia—namely, achlorhydria, hæmolysis, and an increase in the mean size of the red cells. A high colour-index is indirect evidence of the last of these, and it was observed in Emil-Weil's three cases. But he gives no information about the other two signs, and failing this it would be rash to amend the aphorism that anæmia which will not respond to liver is not pernicious anæmia.

JUVENILE RHEUMATISM IN MARYLEBONE.

THE St. Marylebone Children's Rheumatism Supervisory Centre was instituted at the General Dispensary in 1926, and has now published its first report with an analysis of the first 100 cases. An attempt is being made to combine into a simultaneous objective a clinical inquiry into the prevention of heart disease and a laboratory investigation into the nature of the rheumatism of childhood. The clothing was good in 71 per cent., fair in 23 per cent., and bad in 6 per cent. The family income was adequate in 79 and inadequate in 21. The housing was good in 23, overcrowded in 32, damp in 8 only, insanitary in 11, and inadequately light in 9. The clinical analysis shows the family and personal history, age, previous infections, early symptoms and state of nutrition, teeth, and blood pressure. The biochemical work includes hæmatological and chemical examination of blood, urine, and fæces, and certain abnormalities have been found with some consistency. In 75 of the children focal sepsis could be excluded, and the

[1] Le Sang, 1929, iii., 426.

constitutional findings in the remaining 25 provided presumptive evidence of a rheumatic diathesis with a secondary superadded septic factor. Cardiac involvement was found in all the children (60) who exhibited a lowered alkaline reserve. Cases which showed a deviation of the acid-base balance to the alkaline side were eventually classified as non-rheumatic, both on clinical and on biochemical grounds. Phosphate and sulphate excretion was abnormal in more than half the cases, and the aromatic sulphate fraction was increased in 30. Calcium excretion was low in 65, and 70 showed an abnormal carbon-nitrogen ratio. No consistent variations from normal were found in the fæces except for an excessive loss of calcium in 40. Some of these findings are suggestive, but the director, Dr. Halls Dally, rightly declines to draw conclusions at this early stage of the work.

DUTCH MENTAL HOSPITALS.

OF the subcommittees formed by the Royal Medico-Psychological Association there is one which organises study tours and post-graduate education in mental disorder. Just a year ago a party visited the mental hospitals of Holland, and an account of the tour has now been published in pamphlet form.[1] The Dutch Lunacy Law differs from our own in a few respects. Until 1906 a patient could only be received into a mental institution on the certificate of an independent medical practitioner, and the petition of a relative or of the Public Prosecutor in lieu. Any building where more than two insane persons were treated was legally an asylum, but in 1906 the law was amended so that patients could be received in a university clinic without labelling the building as an asylum. Thus patients can now be taken into these institutions or into separate blocks in mental hospitals, called "open wards," without the formality of certification or periodic statutory reports. The visitors last year found that 20 per cent. of the inmates of mental wards had been admitted without any kind of certification. Many of them were obviously non-volitional, and isolation, seclusion, or continuous bath treatment were ordered for them. irrespective of the basis of admission. There is no legal provision for single care or for the disposal of the income of well-to-do patients. One doctor to every 175 patients is required in new hospitals. The medical director is the chief officer, except in Roman Catholic institutions. where the Prior exercises general control. The State issues a diploma in mental nursing after three years' training and examination. The proportion of nurses to patients is about double that found in Britain, but Holland experiences the same difficulty as we do in securing suitable applicants. Assistant nurses are paid from £45 to £60, and nurses holding the diploma £146 to £160 per annum, and the working week varies from 48 to 60 hours. Female nursing of male patients is commoner there than in this country.

Perhaps the most striking feature of the Dutch mental hospital is the application of Dr. Simon's occupational therapy, which was devised with a particular view to improving the condition of restless, destructive, or filthy patients in turbulent wards. It is based on pedagogic principles. Four or five patients are put together in a little alcove, and stillness and silence are enjoined. When a new patient joins the group the atmosphere of quiet industry has a strong influence. Any patient who becomes noisy is removed to a single room for a period varying from ten minutes to an hour, as a penalty. The work on which the patients are employed includes raffia, tearing rags or coir, untying knots in string, rolling string into balls, envelope-making, cleaning letters off three-ply wood tea-chests, rudimentary knitting, rug- and mat-making, tobacco-leaf stripping, brick trimming, tile-making, and cleaning labels. The articles made by more advanced patients display much ingenuity and activity with every variety of handicraft, but even the least intelligent can produce wire paper clips or firelighters made of rolled shavings. Weekly payments are made in recognition of good behaviour and regular work, and to promote self-esteem. On July 1st, 1928—a day taken at random—1273 out of 1420 patients at Santpoort were doing some kind of work; of the remainder, 122 were too old or ill, and only 25 were unoccupied for mental reasons. Dr. van der Scheer, of Santpoort, maintains that turbulent behaviour is not a part of the psychosis, but arises secondarily from loss of educational and environmental influences; he believes that noisy wards will follow mechanical restraint and dark cells into oblivion. Padded rooms are unknown in Holland, their place being taken by continuous baths in which the patient is fixed by a wooden or canvas lid with a padded opening for the neck. Even this restraint is now very little used. A method frequently employed for controlling acutely excited or depressed patients is Kläsi's continuous sleep. Somnifen is given orally or by intramuscular injection twice a day, and the patient is kept absolutely quiet. Manic-depressives may be kept under the drug for a fortnight; dementia præcox patients for a few days. As the somnolence begins to pass off the patient is exercised by two nurses and started on manual occupation, so that by the time he is fully awake again he finds himself engaged in some quiet employment. Sometimes opium is given instead of somnifen.

There is an interesting after-care service in Rotterdam. A special practitioner living in the town is selected as outdoor service doctor; he attends the hospital weekly for a whole day, and so is well acquainted with hospital routine and problems. He gets to know the patients before they leave, and his services are offered to them for after-care and seldom refused. He inspects the environment to which they are returning, and thereafter visits as often as seems desirable. A consulting clinic has arisen out of this service but was not the primary element of it; the home visitation is stressed as the most important and illuminating part of after-care. The service is in close contact with the local welfare society. Since its inauguration three years ago the insanity figures for Rotterdam have decreased, although the population has soared, and other cities in Holland show no corresponding decrease. Thoroughness was the quality in all this work which consistently impressed the visitors; therapeutic measures and laboratory research alike are pursued in Holland with energy and application.

The committee is doing a great service to European psychiatry in linking up the work of different countries by these study tours, and it was a happy corollary of the visit to publish this account for those who were unable to take part.

[1] An Account of a Tour of Dutch Mental Hospitals and Clinics. By A. E. Evans, M.B. Adlard and Son, Ltd., 21, Hart-street, W.C. 1929. Pp. 18. 1s.

SCLEROSING INJECTIONS IN THE TREATMENT OF HERNIA.

SCLEROSING injections in the treatment of varicose veins have become deservedly popular; their effective superiority to excision has been proved beyond dispute. It is not surprising therefore that investigators have sought to adapt similar methods to the treatment of other conditions, such as inguinal hernia. It is curious to what extent the sequence of events corresponds. Injections for the cure of varicose veins were employed about the middle of last century, but were discarded as dangerous largely because the fluids used were unsuitable. Now Dr. J. S. K. Hall[1] reminds us that Velpeau, in 1835, was the first to think of an injection method for the cure of hernia, and actually put his plan into practice, using an iodine solution as the fluid. Several other surgeons followed his lead and good results were recorded. For some reason, probably because the

[1] Medical Journal and Record, 1929, cxxx., 81.

fluids used were too irritating, the method fell into disuse and, according to Dr. Hall, has only been resuscitated by the work of Dr. Pina Mestre, a Spanish physician, who published his experiences in 1927. He and his associates claim to have treated more than 8000 cases of hernia. Almost without exception the inguinal canal was obliterated in 10–15 days. The success recorded appears to be due to the discovery of a non-irritating and effective liquid. Like that used in the treatment of varicose veins, the method is an ambulatory one. The injection is composed of a mixture of the alcoholic extracts of several astringent plants, of which the most important seems to be rhatany. The hernia is first reduced and an injection made every day in the region of the external abdominal ring. An indurated mass appears in a day or two which effectively blocks the inguinal canal. Precise details of the formula are not given by Dr. Hall, nor is it clear whether the injection is made within the lumen of the sac or around it. Various objections are likely to arise in the mind of a critical surgeon reading this account. He may well ask what will happen if inadvertently the injection is made intraperitoneally, whether the coils of intestine in the neighbourhood of the internal ring become adherent in this situation, whether or not thrombosis may sometimes be caused in the pampiniform plexus, and whether, in infants, to whom the method is said to be applicable, any damage is done to the delicate vas deferens. None of these questions is touched upon, but it is scarcely likely that 8000 patients would have submitted to the treatment had complications been frequent. The method, whilst in principle it lacks precision and does not therefore attract the surgeon, appears worthy of consideration; and further investigation is desirable because any effective ambulatory treatment of this common abnormality would be a boon to countless sufferers.

LATER BREAKFASTS IN HOSPITALS.

EVERY profession has its critics amongst what it chooses to call the lay public, and close association with any profession is usually sufficient to show that there are very good reasons behind what the outsider is often inclined to consider an abuse. It has long been a matter of astonishment and indignation amongst a section of the public that the sick, when they are admitted to a hospital or nursing home, find themselves roused from their sleep many hours before the time at which they would be woken up in their own homes. Doctors and nurses know that the cleaning of the wards and the washing of many patients takes a considerable time, that enemata and douchings and dressings often have to be carried out at an early hour, that four-hourly medicines must be given by the clock, and that in fact the hours before 10 A.M. are extremely busy ones for nurses, whose duty it is to have their patients suitably prepared for the visit of the surgeon or physician. To harmonise these interests with the rest which is often the primary therapeutic need of the patient is almost an impossible task. The layman who is inclined to grumble when two nurses have to be installed into his house to look after a sick patient is often slow to comprehend that if all these morning duties were to be piled upon one nurse she would be quickly worn out. Twelve hours is the utmost a nurse can be asked to work, but in private it can be arranged for the change of duty to take place at the hour, be it 8, 9, or even 10, when an equitable distribution of hard work can be made. But in hospital such adjustments are not so easy, since the needs of individual patients vary. It is therefore a satisfaction to learn that the authorities of the Middlesex Hospital have been able to reorganise the work of the hospital on lines which will allow the patients to rest undisturbed until 7 A.M., when breakfast will be served. We understand that in order to introduce this reform—in which the matron, sisters, and nursing staff are eagerly and loyally coöperating—it has been necessary to bring the day nursing staff on duty at an earlier hour and that the visits of the resident and other medical officers and presumably of the students are to be postponed until after 10 A.M. The change is introduced at the moment when the new west wing of the hospital is being occupied, and the authorities believe that their example will be followed by hospitals throughout Great Britain. As much depends upon the interpretation of such a rule as upon its actual wording. If such urgent treatment as is required in the early hours for individual patients is administered without clatter, if ward maids are excluded till after breakfast, and the routine cleaning of floor and lockers is also postponed, the concession will result in securing an extra hour of rest to the patients, possibly even more. In many hospitals it is the custom to serve breakfast at 6 A.M., the active patients being provided with hot water only after the meal, while the helpless ones are washed before it; if there are many of these the process must be lengthy and some at least must be roused uncomfortably early. Any attempt to make the hospital more like the home deserves praise. A later breakfast is one way. Another is to sacrifice the appearance of the ward to the idiosyncrasies of the patient; to allow him to smoke and receive visitors during convalescence, and to accept from his friends fruit and other delicacies which the hospital cannot provide; and finally, to ensure that his friends can obtain not only news of his progress but messages of his wants on the telephone. The Middlesex Hospital is one of those with a reputation for consideration as well as good treatment, and has given new proof that this reputation is deserved.

CHLOROTIC ANÆMIA IN THE MIDDLE-AGED.

A LOW colour-index of the blood associated with virginity in young females used to be regarded as an indication for the administration of iron in large doses or the encouragement of early marriage, either remedy being effective. Chlorosis is now so rarely seen that there must be those among students and medical men of fairly recent standing who wonder whether the whole syndrome of green sickness was not a figment of the imagination of the earlier clinicians. No one, however, who was walking the hospitals 20 years ago will deny that the condition existed. The reasons for its disappearance afford much subject for speculation; increase in the therapeutic use of iron and changes in the dress and normal activities, customs, and pursuits of girls have both been suggested. While typical chlorosis has practically disappeared, however, it is becoming evident that there are other types of anæmia associated with a low colour-index still to be reckoned with. A well-recognised type is that associated with hypofunction of the thyroid; a further type occurring in adult females leading a normal sexual life has been closely studied by Dr. Grieg Altschuller[1] at the Medical Clinic of the University of Prague. In the particular case described by this author there was moderate diminution of the red cells with profound depression of the hæmoglobin percentage and consequently a very low colour-index. The basal metabolism rate was lowered, but the condition made no response to thyroid medication and could therefore be removed from the thyreogenic class. The exhibition of reduced iron in large doses brought about a speedy improvement in the blood picture; when the iron was dropped the anæmia returned, but was again abolished by its administration. In fact, the condition behaved like a case of chlorosis, but differed from it in occurring in a widowed woman of 45, who had borne several children, and in the absence of the peculiar aspect of chlorosis. In considering the case Altschuller points out that hæmatopoiesis may be considered under three heads—the production of the young red cells,

[1] Altschuller, Grieg: Sur la Pathogénie de la Anémie hypochrome, Acta Medica Scandinavica, 1929, lxx., 110–119.

their saturation with hæmoglobin, and their liberation into the blood stream. In cases of the sort described he sees a disturbance of the second step, which is also that affected in the chlorotic diathesis. The fact that in Altschuller's own case the subjective symptoms of headaches, lassitude, and fatigue disappeared within a few days after the exhibition of iron, before any change had become detectable in the blood picture, he takes as confirmation of the view of Morawitz that the action of iron is not confined to the blood-forming system but extends to other organs, including those of internal secretion.

SEWAGE ANALYSIS.

THE Committee appointed to discuss the question of technique in carrying out chemical analyses of sewage and sewage effluents has now brought in its report,[1] which is designed to assist those who are engaged in testing the purity of effluents and of rivers. Two sentences in the report sum up well the two points of view held by analysts on the question of standard methods:—

"A reasonable measure of uniformity is desirable in the methods to be followed in testing the quality of sewage liquors, before and after their purification, and also in the statement of analytical results. Without this it is difficult to be assured that the same standards are being applied or that really comparable results are being obtained. Reasonable uniformity is essential if a common language is to be spoken."

"This search for some measure of uniformity is not intended in any way as a break on initiative, upon which progress in methods depends. It should not, however, be difficult to secure both objects, reasonable uniformity and full initiative."

When the thing to be determined is a definite chemical entity the real chemist will no doubt prefer to choose his method to suit the case; it is only the man who is afraid to exercise his judgment who will willingly let it be bound. In the case of sewage, however, some measure of standardisation, both of methods of analysis and of setting out the results obtained, is desirable. For sewage is a very complex mixture of unstable compounds, containing within itself living agents which continually work changes and modify its composition from hour to hour. Ammonia, chlorine (or rather chlor-ions), and total nitrogen are well-defined chemical individuals; yet in sewage and effluents ammonia is readily formed by the very reagents or processes used, through hydrolysis of amines and the like, while the total nitrogen content of a liquid containing 0·01 per cent. or less is not determinable with the same ease as it is in, say, a sample of bone-meal. The conception of "albuminoid ammonia" which we owe to that brilliant but erratic genius Alfred Wanklyn is another useful label—not to be dignified with the name of entity—which is only valuable if it is applied in the same rigid manner by all whose results are to be compared. This is in brief the case for standard methods of sewage analysis.

The personnel of the Committee and the fact that Dr. George McGowan was mainly responsible for details is a guarantee that the methods are sound. Criticism, if any, will be directed to a degree of precision which may be unnecessarily high and involve an undue expenditure of time. The report opens with the question of sampling, for the most careful analysis in the world would have no value, except as a laboratory exercise, unless made on a sample which really represents something definite. A consideration of the way in which sewage is produced, the daily incidence of the morning wash or bath, other matters of personal hygiene, washing-up, street watering, and the regular operations of industry, the weekly round of washing days, washing-down after brewing and similar intermittent operations, with irregularities of rainfall and secular changes due to the seasons—all these affect the composition of sewage. No shorter interval than a day can be regarded as yielding a representative sample, and this day should be one on which there is little or no rain. Samples should, whenever possible, be analysed within 24 hours of collection, the time elapsing being stated. Results of analysing the same sample one, two, three, and six days after collection are given in an appendix; although the total nitrogen remained constant, the proportion of ammonia went up at the expense of organic nitrogen—in other words, chemical simplification was going on. In the illustration given, however, the variations of solid content suggest that the samples were not at the beginning quite identical, as the non-volatile matter varied; calcium carbonate may have separated out owing to the increasing alkalinity of the liquid. The increase of oxygen immediately absorbed from permanganate showed that unstable organic matter was increasing, while a decrease of that absorbed in four hours seems to indicate that oxidation had gone on, reducing the total oxidisable matter. Turning to the methods themselves, it may be remarked that Crum's mercury-sulphuric acid process for nitrates and nitrites has the advantage of being positive and specific, although rather troublesome; it is useful in cases where the presence of these compounds is a priori improbable and it is desired to verify the findings of a differential method. The mysterious entity known as "X nitrogen" is given its proper significance, which is merely the difference between the real organic nitrogen and that indefinite portion of it which is yielded by the Wanklyn process as "albuminoid nitrogen." The Committee recommends that analyses should, as a rule, include estimations of suspended matter, chlorides, free saline and albuminoid ammonia, oxygen absorbed from an acid solution of permanganate, and, in addition, in the case of purified effluents, nitrates, nitrites, and the Royal Commission test for oxygen taken up from aerated tap water. It is important to distinguish between the last-named test and the permanganate test for oxygen absorbed, the results of which bear no simple relationship to the Royal Commission test.

The report should prove of value not only to analysts but to medical officers of health, engineers, managers of sewage disposal works, and other officials of local authorities on whom falls the burden of sewage disposal. What this burden amounts to is well indicated in Mr. A. J. Martin's recent Chadwick lectures which are summarised on p. 961.

[1] Ministry of Health: Methods of Chemical Analysis as Applied to Sewage and Sewage Effluents. H.M. Stationery Office. 2*s*. 6*d*.

INFANTILE MORTALITY IN KENSINGTON.

To people who do not live there the name of Kensington suggests the last resting-place of smug respectability, the essence of organised drapery, beautiful gardens, or dismal slums. Few envisage the borough as a whole. It is in fact a long, narrow slice of the County of London, shaped like the popular, if unfashionable, Russian boot. Its heel extends south of the ol dexhibition grounds at Earl's Court, to take in the West London (Brompton) cemetery. Its pointed toe touches Piccadilly at Knightsbridge, and its rucked leg includes no part of Kensington Gardens, but, on the other hand, many of the squares, such as Pembridge-square, usually associated with Bayswater. The whole of Holland Park and Campden Hill, and the more dilapidated areas of Notting Hill are included in the borough, its northern boundary at the top of the boot being another cemetery, Kensal Rise. Even a casual survey of this medley of social conditions shows how perplexing would be the problem of investigating any statistical anomaly in the public health of the borough if undertaken by one unfamiliar with the distinctions which fashion has drawn between adjoining districts. It is therefore from within the borough that we must seek light. Fortunately, a group of the doctors practising in the borough are concerning themselves with the welfare of the community, as well as with the health of individuals. The North Kensington Medical Society, which has already shown signs of an active interest

in the medico-social questions of the day, met on Oct. 8th at 35, Colville-road, W., to discuss with each other, and with Dr. J. Fenton, medical officer of health, the cause of the large increase in infantile mortality in 1928. The population of Kensington is 176,000, and the infantile mortality-rate rose from 61 in 1926 to 67 in 1927, and to 85 in 1928; the borough thus shares with Paddington the ignominy of losing 18 more infants under a year old for every 1000 births than the average London district.

The reasons suggested by the speakers for this high mortality varied widely. Dr. E. M. Reece attributed it largely to overcrowding, poverty, and to lack of open spaces. Dr. A. K. Gibson and Dr. A. K. Barrett thought that maternal care must be at fault, and Dr. M. Hellier agreed that many of the mothers went out to work long before the child was fit to be left. Dr. W. C. Robinson spoke of the possible correlation between high infantile mortality and large families. Dr. A. B. Pastel proposed the separation of children suffering from tuberculosis, and the provision of an increased number of qualified midwives, as remedies which might be efficacious. Dr. D. M. Scrimgeour, Dr. R. H. Draper, and Dr. E. Lowlor emphasised the special dangers to which illegitimate and unwanted children were exposed, while Dr. M. W. Geffen had found illegitimate children to be well cared for and healthy. Dr. Christine Murrell and Dr. H. Sanguinetti believed that congenital syphilis accounted for more deaths than was generally admitted, but Dr. G. Slot agreed with Dr. Fenton that the syphilitic mother was rare. Dr. Fenton pointed out that there seemed to be no advantage from the point of view of infantile mortality in a rich population; moreover, since 32·8 per cent. of the deaths took place during the first four weeks of life housing conditions could hardly be incriminated. The closure of basements for residential purposes had its dangers, since unoccupied basements might collect vermin, and become more of a menace than occupied ones. Dr. Fenton concluded by welcoming the coöperation of doctors practising in his district. The outcome of the discussion was the passing of a resolution deploring the high infant mortality-rate in the borough, and proposing further investigation of deaths under one year of age. To this end it was suggested that three members of the Society should confer with the medical officer of health in order to arrange a scheme, or to make further use of existing methods of inquiry.

MEDICAL SCIENCE IN THE FIFTEENTH CENTURY.

A VOLUME[1] consisting chiefly of special studies of the philosophy of the fifteenth century, based in large measure upon manuscripts and unpublished material, makes it clear that the contributions made to medicine and surgery during the fourteenth and fifteenth centuries have been much undervalued. Disparaging generalisations at the expense of the Middle Ages should now be repeated only by those who refuse to give up any catchword or prejudice that was instilled into their minds in childhood. In the first chapter, which is perhaps the most interesting of all, the author introduces the reader to the scientific and other thought of the fifteenth century and aims at giving him some notion of what has been accomplished and what remains to be done in the way of historical investigation of this period. His own studies are recorded in the following chapters and in the appendix which occupies 109 pages. These concern medicine and the law, astronomy, mathematics, and speculative, moral, natural, and political philosophy. There are ten illustrations of manuscripts and diagrams, and the book contains not only a general index, but also an index of the manuscripts referred to. Publication has been assisted by a grant from the Dunning bequest left to Columbia University for the encouragement of historical studies. The inventiveness of the Middle Ages continued to manifest itself in the fourteenth and fifteenth centuries, and in the opinion o 1the author printing is about the only invention of this period thus far adequately studied. During the fourteenth century systematic dissection of the human body was practised for purposes of instruction; and advance was made in measures against infection as a source of disease, and long before the close of the fifteenth century mercury salve was used in the treatment of syphilis. The work of Henry de Mandeville reveals him as a pioneer of antiseptic surgery at the beginning of the fourteenth century, but perhaps the most striking instance of surgical achievement cited is a passage from Bartolommeo Fazio's *De viris illustribus* written in 1456. Mention is there made of the Brancas father and son, Sicilian surgeons, of whom the father was a direct forerunner of Gasparo Tagliacozzi, being—

> "the inventor of an admirable and almost incredible process. For he thought out a way to re-form and complete dissected and mutilated noses, and accomplished all this with wonderful art. Moreover, Antony, his son, added not a little to the beautiful invention of his father. For he devised a process by which mutilated lips and ears as well as noses could be repaired. And while the father had cut skin to piece out the nose from the face of the mutilated person, he took it from the arm so that no facial deformity resulted therefrom. And he inserted the remains of the mutilated nose and bound them up so tightly that the mutilated person could not even move his head. After 15 or 20 days he would little by little cut open the bit of flesh that adhered to the nose and re-form it into nostrils with such skill that the eye could scarcely detect where it had been joined on, and all facial deformity was completely removed. He healed many wounds which it seemed that no resource of medical art could heal."

During the fifteenth century, as in more recent times, the relative merits of law and medicine were occasionally the subject of debate. In course of a dispute of this kind Salutari pointed out that whichever profession is the nobler in origin, it is generally recognised that the lawyers occupy a higher social position. Carlo states that they are called lords and their wives are called ladies, whereas medical men are simply designated as masters, a name common to all vile craftsmen, while their wives receive no title whatever. To this Niccolo can only retort that professors of theology, the supreme science, are also called masters, and that the peasant sometimes calls his donkey "Lord." It would be interesting to hear a discussion on this subject 400 years later; the Medico-Legal Society might consider its inclusion in their programme.

[1] Science and Thought in the Fifteenth Century. By Lynn Thorndike. New York: Columbia University Press. 1929. Pp. 387. 24*s*.

THE MEDICAL REGISTER OF THE IRISH FREE STATE.

"THE Medical Register of Saorstát Éireann" appeared for the first time last week. It is the official register of medical practitioners in the Irish Free State, published by direction of the Medical Registration Council of Soarstát Éireann as ordered by the Medical Practitioners Act, 1927. The volume consists of XXII and 119 pages, and is sold at 10*s*. Besides the Register proper, it has a list of the members of the Registration Council, a copy of the Medical Practitioners Act, 1927, extracts from the Dentists Act, 1928, and tables of the various qualifications which are registrable. The Register contains the names and addresses of 4139 practitioners, of which 4085 were on the Register on the date of its establishment on May 26th, 1928, and 58 were added between that date and Dec. 31st, 1928. Twenty-five names were removed on account of death during that period. The arrangement of the Medical Register follows in its general lines that of the General Medical Register, but contains two additional columns, one to indicate the channel by which admission in the Register has been gained (General Register, Colonial, Foreign or Direct), and one for a serial number. The printing and format of the volume are attractive, and every care appears to have been taken to avoid errors.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

L.

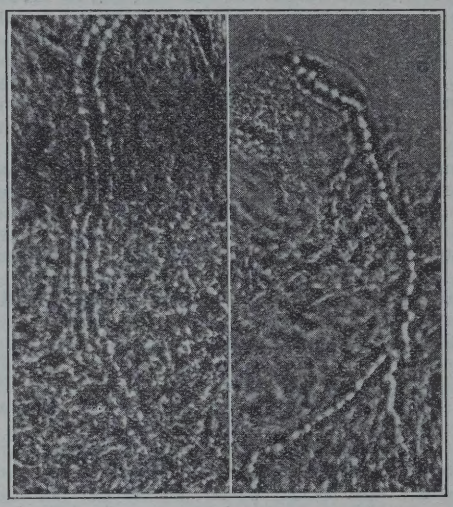
MICROSCOPIC FINDINGS IN DERMATOLOGY.

THE indications for microscopical examinations (excluding histological ones) in dermatology are well defined, and positive results, when obtained, are generally conclusive. The technique and preparation of specimens are simple, but their collection requires some skill, and a knowledge of clinical appearances based on personal experience is indispensable.

Ringworm.

The increasing prevalence of ringworm in its protean manifestations calls for confirmation by the microscope in many doubtful cases, and it is in these, especially, that a sound technique is essential. "Scrapings" in the true sense of the word are almost invariably negative, for the surface epithelium removed in this way is desiccated, and the mycelial elements are quite unrecognisable for the same reason. For a successful demonstration in this disease we must find a vesicle, carefully remove its roof with fine forceps, and if possible, invert it so that the under surface lies immediately under the cover-slip. The interpretation of what is seen in potash preparations of such specimens is by no means always easy. Fat and air globules are doubly refractive, and have often led to error (see Fig. 4.) Too strong a solution of the reagent or too much heat before mounting may produce deformities of cells and tissues easily mistaken, even by those of some experience, for the segmented mycelium of the mycotic group. It has been said that if there is any doubt at all the specimen must be regarded as negative for tinea. The outlines of epithelial cells viewed from above under the 6th objective may deceive the unwary by the relatively high refractile power of their collagen constituent (see Figs. 5 and 6). The error should not arise if the observer bears the possibility in mind, allows sufficient time for the development of a clear field, uses his low-power objective intelligently (most mycelia can be clearly seen with a 1/3 objective), and knows how to manipulate his mirror, sub-stage condenser, and diaphragm to the best possible advantage. These points cannot be too strongly emphasised in this connexion. There are, of course, differences in the size and appearance of the various mycelia that may be met with, but all of them share certain characteristics in common. Continuity, segmentation, dichotomous branching, uniform diameter, and clearness of outline in one plane are the salient features (Fig. 1). Parallel lines of growth are said to be characteristic for the trichophyta (Fig. 2), but no definite conclusions as to the actual nature of the fungus can be drawn without recourse to a cultural investigation which is beyond the scope of this article. For practical purposes it may be assumed that if a mycelium is seen to be growing in the roof of a vesicle, or in the sodden epithelium peeled off from the skin between the toes, it is pathogenic and the cause of the disease. Ringworm of the scalp can always be diagnosed from a microscopic examination of the typical, frayed, and opaque stump, which, owing to reactive changes between the root-sheath and the follicle, never gives rise to a sense of resistance when epilated. It should be superfluous to add that unbroken hairs never contain the fungus. The appearance of the mycelium in the stumps differs from that in glabrous skin by reason, maybe, of the increased resistance to growth among the more closely connected and tougher cells of the hair cortex. The result is apparently to cause a more frequent segmentation of the mycelium, and the appearance of "spores," which have, in fact, no mycological existence in this situation. These "spores," as is well known, may grow inside, outside, or on both sides of the hair sheath, according to the species of the infecting fungus (Fig. 3). Sometimes the sheath is ruptured, and then may arise the important necessity of differentiating between fine oil globules, as from the previous application of ointments from which an emulsion is formed by the potash (Fig. 4), and true mycelial elements. The difficulty should not arise, and can always be prevented by soaking the stumps in ether

FIG. 1. FIG. 2.



Tinea unguium: invasion of the nail substance. The microphotograph (Fig. 1) shows the parallel growth of the mycelium characteristic of the trichophyta. Fig. 2 shows dichotomous branching. (Both 1/6 objective of the microscope.)

or acetone before the potash is applied. In tinea tonsurans, as in other areas, it is neither important nor practicable to make an exact diagnosis with the microscope. The question of large v. small "spored" ringworm can be best determined by cultures, and is only of academic interest. It should be noted that previous treatment with iodine, ointments, &c., frequently stultifies the microscopic findings, and that if there is a suppurative reaction, as so frequently seen in tinea barbæ, the results of a microscopic examination are almost invariably negative.

Pityriasis Versicolor—Seborrhœa—Scabies.

Another condition—it can scarcely be called a disease—in which a microscopic examination may be necessary to clinch the diagnosis is *pityriasis versicolor*. The growth of the fungus is very superficial and gives rise to little or no reaction in the skin. Here the term "scraping" is justifiable, for all that it is necessary to do is to remove a few superficial scales with a scoop or the back of a scalpel, and examine in potash under a 1/6 objective and through a small diaphragm. Masses of delicate fungus and spores form a matted felt-work which can hardly be confused with any other dermatosis. A similar procedure is indicated for suspected *seborrhœic* infection, with the difference that the films obtained must first be stained in a 1 per cent. solution of methylene-blue in order to demonstrate the pityrisporon (bottle bacillus), of Malassez, the acne bacillus, and the *Staphylococcus albus*, which are always present in variable numbers in all such cases. *Erythrasma* is yet another parasitic infection of the groins and adjacent parts, of importance only in differential diagnosis. It occurs mostly in men of middle age and over, and its causative agent—the *Microsporon minutissimum*—is easily seen in potash scrapings under the 1/6 or 1/12 objective. Among the most important, because so easily missed and so easily cured, is *scabies*, and it is often forgotten

that an ovum recovered from a burrow is as decisive in the diagnosis as the demonstration of the acarus.

Chronic Infections.

In wounds, ulcers, and sinuses of the skin the microscope may afford most valuable assistance. The case of primary and secondary *syphilis* hardly needs emphasis. In *tubercle* the bacillus is only found in the very acute forms of ulceration, unless prolonged and patient search in specially prepared serial sections is to be undertaken. When it is present in large numbers, as it may be on the tongue, penis, and round the anus, the prognosis is serious, for this type of ulcer is often the terminal phase of a general infection of the lungs or intestine. The bacillus is practically never found in scrapings from lupus vulgaris, although it is present in all such cases, and can be demonstrated in sections.

The discovery of bacilli resembling the Klebs-Löffler type in chronic and intractable ulcers very rarely indicates the presence of true *diphtheria* of the skin. Almost every cutaneous ulcer contains diphtheroids, which are to be regarded as a contamination rather than a causal factor in the necrosis. The final decision in a doubtful case will rest with the pathologist.

In suspected *leprosy* an immediate diagnosis may sometimes be made by staining the nasal mucus by the Ziehl-Nielson method, and the Hansen bacillus is invariably present in sections of the excised nodules. The *anthrax* bacillus swarms in the serum of bullæ round a malignant pustule, and no diagnosis of *actinomycosis* or *Madura* foot is complete without the demonstration of the causal streptothrix. *Blastomycosis* and *sporotrichosis* need expert pathological assistance for a demonstration, both in fresh smears and cultures.

Various Tests.

Diascopy is demonstrated to every student in the diagnosis of the non-ulcerated lupus lesion. By means of pressure with a glass slide or lens the hyperæmia round the lupus nodule is temporarily obliterated, and the primary infiltration of a characteristic "apple-jelly" colour clearly revealed. It is not always realised that the procedure can be applied in other chronic granulomata, and even in neoplastic conditions, and from this it follows that not every nodule visible on vitropressure is tuberculous in origin. The brownish staining of the wheals in urticaria pigmentosa can thus be made to stand out very clearly, and the absence of fading may be decisive in cases of suspected purpura.

FIG. 3.

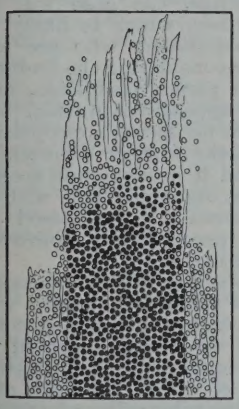


FIG. 4.

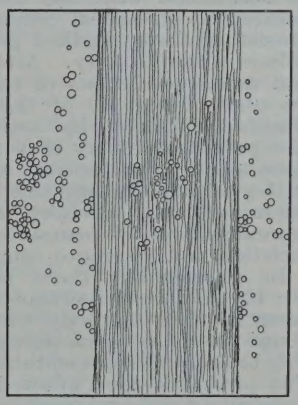


FIG. 3.—Diagrammatic drawing of hair-shaft invaded by microsporon of Audouini, the commonest cause of scalp ringworm in this country. Note the disruption of the swollen fasciculi by the "spores," which, however, do not penetrate between them but surround the shaft like a cuff, or "sand particles adhering to a wet glass rod" (Sabouraud). The difference in shading of the spores is an optical artefact.

FIG. 4.—Semi-diagrammatic drawing of normal hair-shaft which had previously been greased with vaseline and then mounted in potash. Note the variable size of the oil globules, which ought not to be mistaken for "spores."

A recent and somewhat over-valued aid to diagnosis which needs most cautious interpretation is the *phosphorescence* elicited by Wood's glass over a source of ultra-violet radiation. It has found its most popular indication in the diagnosis of tinea tonsurans, but it cannot be too strongly emphasised that many other structures besides the tinea stump will appear luminous when irradiated under these conditions, and that without confirmatory evidence, microscopic or clinical, the diagnosis of ringworm ought not to be made.

FIG. 5. FIG. 6.

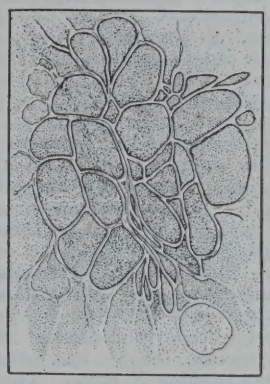


FIG. 5.—Semi-diagrammatic. Mycelium from a case of tinea circinnata of the wrist. Note continuity, dichotomous branching, septa, and uniformity of diameter.

FIG. 6.—Semi-diagrammatic. The periphery is not in focus. The highly refractile outlines are apparent, but cannot be those of mycelium because there are no septa, the refractility is an optical illusion which varies with the focus, and, as is well marked at the periphery, there is a distinct variation of the transverse diameters.

A similar warning applies to *tuberculin* and other cutaneous tests. The former is of some value in cases of chronic tuberculous infection, in particular the tuberculide, which is itself a symptom of specific allergic reaction *by the skin*, to the Koch bacillus. In the eczematous group the allergy is so pronounced that a positive result is apt to follow the inoculation of any antigen, whether specifically the cause of the eczema or not. Most dermatologists have therefore ceased to lay stress on the value of *protein skin tests*, either in eczema or urticaria.

The misinterpretation of the *Wassermann reaction* may occasionally lead to grotesque errors in diagnosis. A person with congenital syphilis may also be afflicted with psoriasis, lupus vulgaris, or pityriasis rosea, while, conversely, a man with tabes or (very rarely) a typical gumma may present us with a completely negative reaction. A previously positive result may become temporarily negative during pregnancy or after an acute specific fever—a phenomenon which, in part, initiated the modern malarial treatment of general paralysis. In cases in which the diagnosis of syphilis appears to be the most probable, recourse may be had to a small "provocative" dose of N.A.B., or an intramuscular myosalvarsan injection, or to a cutaneous test with the specific antigen—luetin.

The *examination of the urine* may throw light on the causation of a genital pruritus and dermatitis, but it does not follow that because there is a reduction of Fehling's solution the patient is a diabetic, or that even glycosuria is present. G. A. Harrison, in an article in this series, entitled Tests of Renal Efficiency,[1] debates this point at some length. Similarly, albuminuria may be only associated with, and not the actual cause of, senile pruritus. Seborrhœa and its complications are frequently associated with a pronounced acidity of the urine to litmus paper, but the reaction is not the only causal factor. A negative urinary report in a case of bromide or iodide eruption does

[1] THE LANCET, 1928, ii., 1092.

not stultify that diagnosis, if there is a history of halogen medication and clinical signs are sufficiently definite, for it is quite probable that the failure of the excretory mechanism is the cause of the rash.

Blood counts are sometimes indispensable adjuncts to correct diagnosis. Thus it should not be forgotten that pruritus, or an erythematous rash of wide distribution, may be the first symptom of leukæmia. Nearly all long-standing itching eruptions are associated with eosinophilia, and a pronounced excess is characteristic in dermatitis herpetiformis, pemphigus, and solar eruptions.

Of late years *X rays* have continued to play a not unimportant part in the determination of the focal sites of obscure chronic diseases. In dermatology their chief function has been in connexion with apical sepsis of the teeth, and such conditions as erythema multiforme, urticaria, and purpura have been cured or greatly benefited as a result of well-considered extractions. The interpretation of the radiograms is often a matter of difficulty. Cases are known in which the removal of condemned teeth had no effect on the cutaneous symptoms, and conversely, not a few in which, although the photographs were apparently negative, the extraction of teeth known to be dead, and therefore septic foreign bodies, was followed by immediate and permanent benefit to the patient. Every case has to be judged on its own merits. Undoubtedly the dentist is a better tribunal than the physician, for he has other means of deciding the issue besides X rays. The final decision should rest with the patient, and neither dental nor medical persuasion should be too cogent.

HENRY G. SEMON, M.D., M.R.C.P.,
Physician for Diseases of the Skin, Royal Northern Hospital.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. N. A. H. Barlow to be Surg. Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Prob. Surg. Sub-Lt. C. Seeley to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. G. Wilson is apptd. Dep. Asst. Dir.-Gen., Army Med. Servs., War Office, vice Bt. Lt.-Col. C. M. Drew, vacated.

Maj. F. C. Atkinson-Fleming, half-pay list, is restd. to the estabt.

TERRITORIAL ARMY.

Capt. C. A. R. McCay relinquishes his commn. on account of ill-health.

Lt. D. Stewart to be Capt.

Lt. W. T. de V. Thomson to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. R. Phillips, from Active List, to be Lt.-Col.

Lt. W. L. Lamb, from Active List, to be Lt.

MILITIA.

Maj. M. K. Nelson retires on attaining the age limit, and retains the rank of Maj.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers for three years on the active list: J. J. Corcoran, C. C. Fenton, C. G. Harold, A. Sheehan, D. D. Watson, and E. A. Wilson.

INDIAN MEDICAL SERVICE.

Lt.-Col. W. M. Houston to be Col.

The undermentioned retire: Lt.-Col. V. H. Roberts and Capt. J. C. Drummond, who receives a gratuity.

Temp. Lt. Bhairo Prasad Nigam relinquishes his temp. commn.

Lts. P. H. Cummins and J. J. Beausang to be Capts.

Cawash Hormuzsha Dhala and Shridhar Damodar Dalal to be Temp. Lts.

Maj.-Gen. Sir Walter H. Ogilvie retires.

The undermentioned relinquish their temp. commns.: Temp. Lt. Hari Narian Gupta and Temp. Lt. Tarachand Dayasingh Shahani.

The undermentioned have vacated appts. in India: A.D.M.S.: Lt.-Col. F. A. H. Clarke, R.A.M.C.; D.A.D.'s.M.S.: Lt.-Col. A. A. C. McNeill, I.M.S., Maj. G. L. Duncan, I.M.S.; D.A.D.H.: Maj. H. J. G. Wells, R.A.M.C.; D.A.D.P.: Capt. R. C. Wats, I.M.S.

Special Articles.

THE PANEL CONFERENCE.

PRIVATE PRACTICE AND THE HOSPITALS.

ON Oct. 24th the representatives of local medical and panel committees met in London for their annual conference. Dr. E. K. LE FLEMING presided for the fifth year in succession, and the meeting was held as usual in the British Medical Association's house in Tavistock-square.

Medical Certification: Disciplinary Procedure.

Last year's conference was largely devoted to discussing the reasons why claims for sickness benefit have lately increased. While protests were made against the allegation that panel practitioners in general have become careless in issuing certificates, it was agreed that a certain amount of laxity had always existed, and provisional approval was given to certain measures which would expose gross abuse of the sickness funds. The Insurance Acts Committee (I.A.C.) and the Ministry of Health have since been considering what action should be taken against practitioners who are thought to have made out certificates improperly, and the proposed machinery for dealing with such cases was explained to the conference last week. The Minister's first step is to refer the case to the panel committee (or to a committee formed for several counties) which will hear the charge and the evidence on both sides, and report whether the practitioner has failed to exercise due care in certification, and (if so) to what extent and how gravely. It will make recommendations to the Minister, and at the same time will furnish the defendant practitioner with a copy of its report and conclusions. If either the Minister or the practitioner is dissatisfied with the findings, the case will be referred to an appeal committee, which is likely to consist of three medical practitioners who are not officers of the Ministry. After considering the findings and recommendations of the panel committee, and (in case of appeal) of the appeal committee, the Minister will state what action he deems appropriate. The practitioner may then make further representations against the decision, and if he does not accept it the various findings and recommendations will be referred to an advisory committee composed of representatives of insurance practitioners, approved societies, and insurance committees.

In commending these plans to the conference, Dr. H. G. DAIN (chairman of the I.A.C.) said it was essential that the body which first heard the complaint should be professional, and that it should be able to make its representations direct to the Minister. The present system allowed of public criticism and press reports which caused regrettable misconceptions. On the other hand, the approved societies would not consent to any arrangement from which they were altogether excluded, and it was outside the province of the conference to tell the Minister what advice he should procure after receiving reports on the facts.

The constitution of the Minister's advisory committee provoked a discussion, in which Dr. C. F. T. SCOTT said it was wrong that professional matters should be judged by a predominantly lay committee. Like Dr. W. LOCK he held it contrary to the spirit of British justice that the Minister, an interested party, should appoint the tribunal to decide the issue. Dr. L. J. PICTON, for Cheshire, proposed that the advisory committee should be replaced by an independent barrister, sitting with a medical assessor, who would hear all parties and form an unbiased opinion. Panel practitioners, he said, had surrendered their claims to an appeal to the High Court because they were assured that cases would be referred to a professional committee—consisting of three medical officers of the Ministry and three of their own repre-

sentatives. This committee was now to be disbanded in favour of a partisan body on which approved societies and insurance committees would have a majority.

Dr. DAIN replied that these criticisms of the scheme arose from misapprehension. There would be no interposition by laymen until the questions of fact had been decided. The advisory committee would not be able to re-try the case; it was not a tribunal or a court of appeal, it would not hear evidence or advocates, and its duty would merely be to advise what action should be taken on the proven facts. This meant that the approved societies and insurance committees were cut out of the proceedings till after the case was judged, and this was as far as the Minister would go. If the approved societies were not allowed to say something to the Minister at some stage the scheme would fall through, and this would be a pity, because everyone was anxious to put a stop to the action of those few practitioners whose lax certification was prejudicing the position of their colleagues. Dr. E. R. FOTHERGILL called this "sentiment," and pressed for amendment of the draft regulations. But the conference did not accept his view, and ultimately gave its approval to the procedure proposed by the Ministry.

Dr. G. J. B. CANDLER-HOPE, for the North Riding, suggested that in cases of excessive certification the fine for a first offence should not exceed £5, and complained that the amounts withheld by the Ministry often bore no relation to the recommendations of the medical service subcommittees. No law was passed without stating a maximal penalty for its infringement, and he wanted to introduce the principle that breach of the regulations should be met by payment of a fixed sum. Dr. DAIN, however, took the view that each case should be decided on its merits. A maximum was undesirable because it tended to become a minimum, and it was not the least bit true to say that these things were decided at the mere whim of the Minister. "We have got rid of all that business now," said Dr. Dain, "and we are satisfied that the machinery introduced a year or two ago is working extremely well."—The North Riding amendment was lost.

Dr. J. NELSON, for Kingston-upon-Hull, proposed "that the statistics relating to the issue of certificates by doctors in each area should be circulated to panel committees as in the case of prescribing certificates." This was accepted by the conference on the ground that it might be useful to a practitioner to know how his issue of certificates compared with the average for the same district.

Reference of Cases to the R.M.O.

Dr. DAIN reported that approved societies were finding that the money available for referring cases to regional medical officers was all used up—(cheers). Surprising as it might seem, the societies were anxious not to refer cases unnecessarily, and hence they wanted to be able to tell which patients were being visited at home. It had therefore been suggested that Form Med. 40 should in future bear the alternative words "at your residence" and "at my surgery," so that by striking out one or other the doctor could indicate where he had seen his patient. Having stipulated that failure to strike out the words should never get the practitioner into trouble, Dr. Dain felt that here perhaps was a convenient occasion for agreement with the societies. But this warm breath of charity had no chance against a blast of six reasons to the contrary with which Dr. J. W. ANDERSON swept the conference. Blood ran cold throughout the room while Dr. Anderson spoke of unscrupulous patients who would strike out the words "at my surgery" so as to avoid going to the R.M.O., and there was a further shudder when he suggested that patients would insist on being seen at home if they got to know that this would save them from having their cases referred.

Two other questions concerning the work of regional medical officers were raised towards the end of the meeting. Dr. J. O. SUMMERHAYES proposed for East Sussex—

That it be an instruction to the Insurance Acts Committee to take such steps as may be necessary in order to secure that the minimum time within which information required to be given to the regional medical officer shall not be less than seven days instead of 48 hours as at present.

He complained that 48 hours was an inconveniently short time for a reply, but Dr. DAIN said he hoped the conference would not agree to this. The practitioner's object was to get things dealt with expeditiously, and it would be a mistake to pour sand into the Ministry's machinery. The patient ought to go to the R.M.O. as soon as possible after seeing his own doctor, and thanks to a general speeding-up the interval had now been reduced to a week.—The motion was lost.

Dr. G. F. WHYTE, for Dundee, brought forward a motion urging that the present conditions governing appeal or arbitration against the decisions of the R.M.O. or D.M.O. (district medical officer) are unsatisfactory and suggesting that the I.A.C. should negotiate with the Ministry of Health and the Department of Health for Scotland in order to institute a medical board of appeal. Dr. Whyte thought that both patient and panel doctor had grievances. The patient's appeal from the R.M.O.'s decision was heard (if at all) only after long delay during which payment stopped, whilst the doctor had his opinion simply set aside by another doctor—often one, moreover, who saw but little practice and had acquired an official mind. Dundee believed it would be better if doubtful cases were referred to a special medical board.[1] Dr. DAIN agreed that the insured person had a very thin time in appeals against his society, but pointed out that the methods governing such appeals were no concern of the I.A.C. Where a practitioner protested against an R.M.O.'s decision the case was usually referred to another R.M.O. As there was no time for fuller discussion, Dr. Whyte agreed that his resolution should be referred to the I.A.C. for consideration.

Certificates for Convalescence.

On a motion by Hertfordshire suggesting that the medical certification rules might be altered "so that it is not essential that an insured person should have been under the continuous care of one practitioner for 28 days before that practitioner may issue a convalescent certificate," Dr. DAIN said that he thought the I.A.C. should tell the Ministry that the convalescence certificate was dangerous to doctors and useless to anyone else. He had often tried to get the period reduced from a month, and if no alteration could be made he thought that as a measure of safety practitioners should refuse to use this certificate. After properly saying that a person was unfit for work and required convalescent treatment it was undignified to be hauled up because the time happened to be a day short.—This question was referred to the I.A.C., together with a motion by Worcester to the effect that an insured person need only be incapable of work for 14 days, instead of 28, before a certificate may be issued.

At Hertfordshire's suggestion it was also agreed—

That all National Health Insurance Certificates should have printed on them in red letters, similar to those on the front pages of the medical certificate books, that "These forms are to be used for National Health Insurance purposes only."

Prescribing and Dispensing.

The I.A.C.'s annual report says that the Minister of Health has appointed a central advisory committee to assist insurance committees "to proceed on uniform principles in defining drugs or medicines for the purpose of medical benefit." This committee will be asked to decide whether a substance or preparation is (*a*) never a drug, (*b*) always a drug, or (*c*) sometimes a drug. Since there is at present no way of dealing with insurance practitioners who prescribe on the

[1] Similar views were set out in our correspondence columns on Oct. 19th, p. 850.—ED. L.

official form substances which insurance committees do not regard as drugs, the new advisory committee has prepared a draft article which provides machinery for dealing with such cases. Dr. DAIN explained that the proposed regulations were framed on the assumption that this irregular prescribing did not require disciplinary action, and the general principle behind them was that if anything is ordered on a prescription the chemist must dispense it. The draft article was approved by the conference without discussion.

The report also says that the I.A.C. has received representations that the cost of such drugs as quinine urethane ampoules should not fall upon the dispensing doctor's 2*s.* 3*d.*, or the non-dispensing doctor's 1*s.* 3*d.*, per 100 patients, but should be a charge on the drug fund. Dr. DAIN announced that he had now been told by the Ministry that quinine and urethane and similar solutions were shortly to be placed on the list.[2] Dr. H. DICKIE spoke of the increase in the cost of medicines since the early days of the Act, and moved, for Northumberland, "that drugs administered personally by a practitioner, as part of a course of treatment, and not as an emergency, should not be required to be supplied by him at his own expense," as at present prescribed in the terms of service. This resolution, together with one by Northamptonshire about the prescription of liver extract, was referred to the I.A.C. for consideration.

Dr. DAIN reported that the new National Formulary had been adopted in about 50 of the 128 insurance areas in the country. Dr. H. S. BEADLES expressed the view of West Ham that while the new Formulary was part and parcel of the insurance scheme, it had not been prepared for the benefit of practitioners. (Indeed it would prevent them using their own local pharmacopœias.) The distribution should therefore be made gratis. This suggestion commended itself to the conference, which then proceeded to pass the following motion proposed by the I.A.C. :—

That the Conference supports the Council of the British Medical Association in its efforts to obtain amendment of Section 3 of the 1925 Dangerous Drugs Act, and recommends that heroin and its salts should come under the same conditions as morphine and its salts ; also that the Council should on all possible occasions urge the Government not to enter into international conventions involving medical questions until the opinion of the medical profession has been ascertained.

Encroachment of Hospitals on Private Practice.

Dr. FOTHERGILL, for Brighton, drew attention to the additional benefit which is defined as "payments to hospitals in respect of the maintenance and treatment therein of members, and the payment of the whole or any part of the travelling expenses incurred by or in respect of members in travelling to and from hospitals." The work that should be done by private practitioners, he said, was going to hospitals where it was done gratuitously by medical men. It was essential therefore that certain lines should be laid down for the future, and he proposed a motion "that any scheme prepared by an approved society for the provision of additional benefits to prove acceptable to the medical profession should include the following :

(*a*) That the arrangements for consultations and specialists' services should provide that these services shall be given, so far as is possible and consistent with the best interests of the patients, by a private practitioner at his consulting rooms or at the patient's own home, and not at the out-patient department of a voluntary or State institution.

(*b*) That approved societies should be able to enter into financial arrangements with both voluntary and State institutions for the provision of hospital benefit for insured persons, such arrangements allowing insured persons to select as between the two classes of institution.

(*c*) That hospital benefit be defined to include in-patient treatment, as also consultant and specialist services, which, consistent with the best interests of the patients, cannot be given by a private practitioner at his consulting rooms or at the patient's own home.

[2] In a recent "range of service" case the referees decided that the treatment of varicose veins in the leg by intravenous injections is within the range of an insurance practitioner's agreement.

Dr. PETER MACDONALD thought the conference should not commit itself to these definitions without further thought. His experience of ophthalmic benefit showed that it often had to be given at clinics, and his experience of hospital management taught him that it might be quite impossible to make arrangements for insured persons to select the kind of hospital they required. Dr. LOCK also held that the proposals should go to the I.A.C. for consideration, and this suggestion was adopted by the meeting after Dr. SUMMERHAYES had expressed his fear that general practice would be wiped out by the Local Government Act. The time had come, he believed, to make a bold bid to recover the practice now being taken over by hospitals, specialists, and medical officers of health.

The Place of General Practitioners in Hospitals.

This opinion of Dr. Summerhayes' found much support in a subsequent discussion on a motion by Manchester demanding that practitioners should be allowed to attend and treat those of their patients who enter voluntary and municipal hospitals. Dr. E. JOHNSTONE, the proposer, felt that the future of the general practitioner depended on his participation in the work of public hospitals and public health services. Cut off from the instruments of his craft and the coöperation of colleagues he could never rise to be more than a distributor of stomach bottles and cough mixtures.—Dr. M. W. RENTON asked how medical men could become proficient in modern methods if they did not have access to clinics and hospitals.

Dr. BRACKENBURY proposed, as an amendment to the Manchester motion—

That it is desirable that provision be made in, or in association with, voluntary hospitals and municipal hospitals, or in separate institutions, for practitioners to attend and treat those of their cases who are admitted to such institutions.

Dr. MACDONALD supported this resolution because it went beyond the declared policy of the British Medical Association. It was desirable that general practitioners should have access as soon as possible to the hospitals of the country, which had hitherto been looked on too much as the perquisite of specialists and consultants.

Dr. DAIN spoke of difficulties. The practitioner, he said, often fought shy of appointment to a hospital lest he should be compelled to work there when it was inconvenient. At big hospitals it would often be impossible to give the right of entry to a large number of doctors who could call on the services of the nursing staff. A questionaire had been sent out to voluntary hospitals all over the country, said Dr. Dain, to find out what facilities there already were for general practitioners to keep their patients under observation and treatment.

Sir RICHARD LUCE said that while he was in favour of general practitioners having access to hospitals for their patients, it was difficult to alter the closed system of staffing where it was already established. The hospitals to be transferred to municipalities offered a great chance to develop the work of practitioners in new places instead of disturbing the good work now being done.

Sir ROBERT BOLAM asked what the general practitioner really wanted in the hospital. Did he want to do general work or consultant work ? In voluntary hospitals did he want to compete with the honorary staff, or did he want to do the work of house surgeon or house physician ? Sir Robert thought the question should be referred to the I.A.C. for report.

Dr. D. C. MCARDLE had come to the conclusion that what most practitioners wanted was to be allowed to start their careers all over again, which was impossible. The real opportunity lay with the young men now coming out of the universities, who must not be allowed to fall into the rut of their predecessors in general practice.

Dr. SUMMERHAYES said that what he himself wanted was to be able to go into the hospital and see that his patient's broken leg had been set properly and was

being nursed properly. He wanted to be able to do lots of things, including minor operations, which general practitioners could do perfectly well if they had the chance—indeed, much better than they were being done now.

Dr. Brackenbury's amendment was carried, and a proposal to refer the subject to the I.A.C. was lost (by a small majority) because the conference wished to express its general opinion at once.

Periodic Examination of Insured Persons.

Early this year the Lancashire Insurance Committee tried to get a ruling that healthy people are entitled to periodic medical examination by their panel doctors. The local panel committee objected, and maintained that a fee should be charged for a service of this kind. The I.A.C., though it did not dispute that it is part of the doctor's duty to examine any insured person who presents himself in the ordinary course of practice, informed the Ministry that it is of opinion that periodic and systematic examination of insured persons who believe themselves to be in good health is not within the present contract of insurance practitioners. Lancashire brought before the conference a resolution arising out of this decision, and calling for modification of the definition of the range of service. But Dr. DAIN persuaded the meeting to leave the problem alone for the present. The demand for examinations of this kind did not yet constitute any burden, and the fact that no fee need be demanded enabled medical men to deal in a human way with patients who asked a perfectly natural question. The trend of public opinion was such that in course of time panel practitioners would probably be asked on what terms they would render this service to all insured persons.

Importance of Keeping Medical Records.

Dr. C. EDE, for Wiltshire, proposed :—

That the conference instructs the Insurance Acts Committee to take steps to impress on every insurance practitioner the fact that owing to neglect in keeping the statutory medical records, many men are furnishing regional medical officers, and thus the Ministry, with misleading evidence which suggests that they are being overpaid, and are therefore jeopardising not only their own income, but those of their fellow practitioners.

It was an open secret, he said, that all over the country men were failing to put down all their attendances on the record cards. This would not matter a bit if it were not that R.M.O.'s were collecting the cards and analysing the figures at the Ministry. As it was, a day of reckoning was at hand. When the question of revision of the capitation fee was raised again these figures would be a trump card in the hands of the Ministry. The practitioners' representatives would either have to accept them or admit their inaccuracy—in which case the Ministry would retort : " But you've been *paid* to keep these records." There were only two ways out of the difficulty. If the profession was sufficiently strong and united it could refuse to have anything to do with records of attendances and visits—excluding clinical records, which were useful to the doctor and his patient. The other alternative was to take the action suggested by the Wiltshire motion.—Dr. DAIN described the present situation as " very awkward," and the motion was passed.

A Hardship for Pregnant Women.

Dr. J. J. BEKENN, for Birmingham, spoke of the resentment caused by approved societies sending pregnant women to the R.M.O. when they were nearing term. He proposed—

That when a medical practitioner has satisfied himself that an insured person is so far advanced in pregnancy that on that account she will not be able to work again until after her confinement, it shall be lawful for him to give a certificate to that effect, stating that the woman is unable to follow her employment, and that such certificate shall be sufficient warranty to pay the sick benefit until the termination of the pregnancy.

Dr. O. B. TRUMPER anticipated criticism of this motion by pointing out that quite a large number of the women were not going to be attended by the practitioner at confinement and therefore need not visit him.—Dr. A. W. HOLTHUSEN told of a chambermaid, pregnant eight months, who was described by her practitioner as unfit to work. Her approved society referred the case to the R.M.O., who saw her at eight and a half months and said she was fit to go on with her work as a chambermaid. The approved society then brought a charge of lax certification against the panel doctor!—The resolution was referred to the I.A.C., after the opinion had been expressed that it was very valuable to have patients calling weekly at the surgery during the last six weeks of their pregnancy.

The Range of Service.

Dr. FOTHERGILL, for Brighton, introduced a motion laying it down that when it has been decided that an operation or other service is outside the scope of a practitioner's obligation, it is no concern of any committee or authority to decide that the practitioner who renders the service has appropriate skill or experience.—This motion produced a long discussion, in the course of which Dr. DAIN said it was quite time that this question was reconsidered, inasmuch as new methods of treatment were continually being evolved which were outside the terms of contract but could easily be learnt. His suggestion that the resolution should have the attention of the I.A.C. was accepted.

Dr. RENTON proposed that the I.A.C. be instructed to draw up a list of services outside the contract of the insurance doctor. He thought that these should include the injection treatment of varicose veins, which was by no means easy, and should not be approached lightly. He had asked some junior surgeons at an injection clinic whether they would rather stake their reputations on 100 unselected cases of varicose veins or on 100 unselected cases of appendicitis. The answer was " the appendix every time." —Dr. DAIN asked the conference not to pass the motion. It was not the business of the I.A.C. to draw up a list, and anyone could obtain the Ministry's list on application.—His appeal was successful.

Miscellaneous Topics.

The three following motions were passed on the proposal of Newcastle-upon-Tyne, Kingston-upon-Hull, and Cumberland respectively :—

That in the opinion of the medical profession additional treatment benefits should be uniform and available to every insured person.

That the conference is of opinion that medical record cards should not be produced at a hearing before a medical service subcommittee without the consent of the insured person having first been obtained, except when such production is considered necessary, in his own defence, by the practitioner concerned ; and that the clerk to an insurance committee has no right to demand the production of a medical card for medical service subcommittee purposes.

That the Insurance Acts Committee be requested to consider the position of insured persons resident in convalescent homes in regard to being signed on by the medical officers in charge as temporary residents, whether they require medical treatment or not.

A motion was put forward by Buckinghamshire asking the I.A.C. to press for " further recognition by the Ministry of Health of the value of timeage and mileage spent by rural doctors on their insured patients." This motion was lost.

Dr. H. J. Cardale was elected chairman of the conference for the coming year, and the thanks of the conference were given to Dr. Le Fleming for his conduct in the chair.

PRESENTATION TO A PLYMOUTH SURGEON.—On Oct. 11th Mr. T. Young Simpson was presented with a walnut compactum cupboard and an illuminated autograph book from many of his medical colleagues on his retirement from practice owing to ill-health due to overwork. Mr. Simpson has had a large surgical practice in Plymouth and the surrounding districts since 1906, and his enforced retirement will be keenly felt by many of his medical confrères and a great number of the general public.

MEDICINE AND THE LAW.

Coroner's Inquest and Police Proceedings.

AT the resumption recently of an adjourned inquest due to a traffic accident the coroner for South-East London complained that the police had interrupted the course of his inquiry. Two Lewisham men were fatally injured on August 31st, being run into by a private motor-car. On the night before the inquest the police arrested the driver of the motor-car and thereby, as the coroner contended, interfered both with the immemorial privilege of the coroner's jury to inquire into the death of two local inhabitants and also with the driver's right to give his own account of the incident at the earliest possible moment to the coroner and his jury. The magistrates committed the driver for trial, and he was sentenced to six months imprisonment on Oct. 17th at the Old Bailey.

The concurrent operation of a coroner's inquest and of criminal proceedings before a magistrate in cases of homicide was a duplication of machinery which engaged the attention of the Departmental Committee on Coroners 20 years ago. It had two prominent features: it wasted the time of witnesses (not to mention the accused) in attendance at successive stages of two parallel investigations, and secondly, it caused an overlapping of committals by the coroner and the magistrates. In this latter connexion it was on record that a person accused of manslaughter on board ship was once committed by a coroner for trial at Exeter Assizes and by the magistrates for trial at Bodmin. In addition to this cause of unnecessary inconvenience and expense there were the two difficulties that committal by a coroner often follows the reception of evidence not strictly admissible in the assize court, and that in practice the prosecution always preferred to act on the magisterial proceedings rather than on the inquest. On the other hand, there were instances where the dismissal of a charge before the magistrates was followed by successful prosecution at assizes on the coroner's committal. When at length Parliament dealt with these matters in the Coroners (Amendment) Act of 1926, it decided to end the duplication by suspending the inquest. Under Section 20 if, before a coroner's jury has given its verdict, the coroner is informed that someone has been charged before examining justices with the murder, manslaughter, or infanticide of the deceased, the coroner "shall, in the absence of reason to the contrary, adjourn the inquest" till the criminal proceedings are over. When the latter proceedings are concluded, the coroner "may . . . resume the adjourned inquest if he is of opinion that there is sufficient cause to do so." One adequate "reason to the contrary" against an adjournment would be, as the editor of Jervis on Coroners observes, the desirability of receiving the report of an analysis already ordered. One "sufficient cause" for resuming an inquest would be to avert a failure of justice where magistrates have refused to commit for trial. The editor of Jervis adds his opinion that in all street accidents the coroner should certainly complete his inquiry.

The brief report of the inquest at Lewisham mentions the arrest of a person by the police, not the charging of that person before the magistrates. It is the latter, not the former, step which is the condition precedent to adjournment of the inquest. A coroner might be able to conclude his inquiry notwithstanding arrest; in any case he can (and, in the Lewisham case, no doubt rightly did) complete it later. The police, of course, are under no obligation to time their moves in a case of suspected homicide so as to suit the coroner. As, however, the relations of coroner and police are mutually helpful, it is undesirable that one inquiry should seem to be jockeying the other for position. Some part perhaps of Major Whitehouse's complaint is in effect directed not against the action of the police to-day but against that of Parliament in 1926. In some respects, as the British Medical Association stated to the Departmental Committee many years ago, the office of coroner is a vestigial structure. Parliament is unlikely to restore to that office the power which it took away in 1926; it may even make yet further inroads, though the Home Secretary has just announced his view that the amending legislation of 1926 is sufficient for the present.

SURGICAL CATGUT.

THE preparation of surgical catgut involves the production of material which is free from bacterial contamination, and yet remains flexible, strong, and absorbable. Lord Lister, who introduced sterilised catgut into surgical use, spent 40 years in attempting to improve its manufacture, and the Medical Research Council, in a preface to a green book[1] published to-day, state that the work recorded therein stands in historical succession to his classical studies. They draw attention to the dilemma by which the catgut maker is confronted. Catgut can be efficiently sterilised, but every method of disinfection has some effect in diminishing the tensile strength of the ligature, upon which its surgical value and the safety of the patient depends. The efforts of Prof. Bulloch and his colleagues have been directed to ascertaining the methods by which bacteriological sterility can be achieved with least damage to the physical qualities of the material. Their investigations have had among valuable positive results at least one negative finding of importance—the discredit of biniodide of mercury as a suitable sterilising agent. The general conclusions reached are summarised as follows:—

1. It has been shown that the pH of the collagen ribbon wash liquid is an important factor in the production of ligatures. To prevent degradation a wash liquid of pH 4·7 is required, but for optimum strength pH 8–9. A compromise may be effected by carrying through most of the process of washing in a solution of pH 4·7 and finishing with a bath of alkali at pH 8–9. For this same reason the ribbons should not be washed in water before spinning.

2. Optimum strength of ligature is obtained by using narrow ribbons and spinning each individually and then collectively, so that each ribbon makes 2·5 turns per inch and then collectively a further 5 turns per inch. It is important that the spinning should be uniform otherwise the strength and diameter along its length will vary.

3. It has been shown that when ligature is treated with iodine an acid is produced which is harmful for the reason given in (1). Means of reducing or eliminating this effect have been worked out by the use of potassium iodate.

4. It has been demonstrated that the treatment of ligature for 8–9 days in such a way that it absorbs 12 per cent. of its weight of iodine ensures sterility.

5. The disadvantages of excessive treatment with iodine have been demonstrated and the advantages of removing the iodine from the ligature after sterilising indicated.

6. Data have been obtained whereby control of the amount of the absorbed iodine may be obtained.

7. The advantages of incorporating glycerol in the iodine solution and in the final alcohol solution have been illustrated, particularly from the point of view of flexibility of the ligature, and therefore, strength of the knot.

8. It has been shown that the ligature in aqueous iodine swells. This may be reduced by treating it under tension, when its tensile strength is increased.

Important practical issues are raised by this report. Deaths from tetanus and other infections are known to have resulted from the use of contaminated ligatures, and though fatal results attributed to the use of imperfect catgut are numerically very rare indeed in relation to the vast total number of ligatures used in surgical operations, it is nevertheless recorded that some infection was found in every one of eight batches of catgut ligatures purchased in 1927. The data given in this report and the experience gained in obtaining them have already been useful in the guidance of administrative action. The licensing authority under the Therapeutic Substances Act has decided to add surgical catgut to the list of substances

[1] The Preparation of Catgut for Surgical Use. By W. Bulloch, L. H. Lampitt, and J. H. Bushill. Medical Research Council, Special Report Series No. 138. H.M. Stationery Office. 1929. Pp. 178. 4*s*.

subject to control under the Act, and in the future the profession and the public will have better guarantees that catgut supplied has, in fact, the purity and quality claimed for it.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

National Health Insurance.

THE second reading debate in the Dail last week on the National Health Insurance Bill, 1929, gave the opportunity for a discussion of many of the problems of national health insurance. The Bill, the second reading of which was moved by Mr. R. Mulcahy, Minister for Local Government and Public Health, is intended to give effect to some of the minor recommendations of the committees of inquiry which reported in 1925 and 1927. It proposes to abolish the class of deposit contributor, and to make consequential changes in regard to the power of societies to refuse or expel members. It also proposes to abolish insurance committees, and to transfer their powers and functions to the county boards of health. The funds formerly available for the insurance committees will be diverted toward the expenses of medical certification. The Minister said he had hoped to deal with the question of amalgamation of societies by an amendment to the present Bill, but he found that it would be more convenient to deal with it in a second measure. He intended, therefore, after Christmas to introduce a Bill containing proposals concerning amalgamation. It would encourage voluntary amalgamation, and would give power to the National Health Insurance Commissioners, after a period of two years, to effect compulsory amalgamation to a maximum number of 12 or 15 societies for the whole State. At present there were 65 societies. Compensation, but not pensions, would be granted to employees whose services might be dispensed with as a result of amalgamation. The Minister stated that he was not at present putting forward any proposals for medical benefit, but that personally he thought some system of medical benefit was desirable. The effecting of economies in administration would hasten the day when they would have medical benefit. Mr. O'Kelly, of the Fianna Fail party, moved an amendment declining to give a second reading to the Bill, until proposals should be laid before the Dail providing for (1) administration through one society, and (2) medical benefits. He explained, however, that, while his party thought certain amendments necessary, they did not intend to oppose the Bill. He believed that the establishment of a system of medical benefits would improve the public health, and put a stop to the wastage of life all over the Saorstát. Mr. O'Connell, leader of the Labour Party, was also in favour of medical benefits; he thought nationalisation of the administration of national health insurance was to be preferred to any modification of the present system of administration by approved societies. In this he was supported by Dr. T. Hennessy. The latter also spoke of the necessity of a system of medical benefit, and favoured the establishment of a national medical service which would provide medical attendance not only for the insured but for their dependents. He quoted figures to show that at present in the cities the poor-law medical service was inadequate to give medical attendance to the workers and their families. Several other deputies spoke in favour of a medical benefit, and none spoke against it. This unanimity in all parts of the House is gratifying, and should render the Minister's task easier when he finds himself in a position to tackle it. His chief opposition comes, one may assume, from the Department of Finance. The proposed establishment of a system of medical benefits in Northern Ireland will render the problem more pressing in the Irish Free State, which up to the present has shown a more progressive spirit in matters of health than the Northern Province. The present Bill was given a second reading.

HYDROLOGY AND RHEUMATISM.

THE BUDAPEST CONFERENCE.

THE International Society of Medical Hydrology, in association with the International League against Rheumatism, has held its annual meeting this year from Oct. 13th–18th in Budapest, under the presidency of Baron KORÁNYI, professor of internal medicine; with three subsequent days in Austria. About 300 members and guests attended the meetings, representing 21 countries; Russia, Finland, Bulgaria, and Norway being represented for the first time. Receptions were accorded to the Society by the Regent, the Ministry of Social Welfare and Labour, the Ministry of Agriculture, the Lord Mayor of Budapest, and the Hungarian Balneological Society, and opportunity was found for examining the many establishments for thermal and mud baths in the city, including the popular Wave and Strand Baths.

A new Committee on Social Hydrology was appointed by the Society, and the existing facilities for treatment of insured persons were studied both in Hungary and Austria. Groups of rheumatic cases were investigated at the Szt. Lukács Baths at Budapest and the Wenckebach Clinic in Vienna.

The Action of Hypertonic Waters.

Hungary is rich in hypertonic bitter waters like those of Hunyadi János. Prof. DALMADY (Budapest) referred to the fact that the SO_4 ion which they contained increased secretion and transudation by the intestinal mucous membrane, but not the concentration of the blood. He showed that stronger Glauber's salt solutions were irritant and increased the formation of mucus, whilst the bitter waters had been drunk for many years without irritation and without any increase of alkali loss. They were of value in causing effortless evacuation, and in larger doses in medical and surgical practice where free purgation was desired; also for prolonged use in arterio-sclerosis and congestive cases with a tendency to hæmorrhage, and especially in certain toxæmias. Many chronic diseases were amenable to hypertonic waters, according to the old doctrine "qui bene purgat bene curat." An unbiased re-examination of this method of treatment was called for.

Prof. PINILLA (Madrid) contributed observations on the cryoscopy and viscosity of the hypertonic waters of Spain, of which that at Carabaña was a type. It had been clearly shown that a nervous stimulus was necessary for endosmosis, and Sanarelli had suggested that purgation was due to the stimulation of the nervous network by dissociated ions. Probably the process of purgation was brought about by the formation of hydrophile colloids and their supersaturation, analogous processes to those which took place in vegetable tissues in springtime, leading to the abundant production of liquids.

Dr. HARPUDER, Director of the Balneological Research Institute at Wiesbaden, pointed out that the SO_4 ions were difficult of resorption. In concentrated solutions they powerfully stimulated secretion by the bowel, hindered the resorption of other substances, and set up peristaltic waves. They also relaxed the sphincter of the gall-bladder. He found that hypertonic waters did cause a degree of inspissation of the blood as well as some increase of total metabolism.

Dr. FORTESCUE FOX (London) held that hypertonic waters (in England Harrogate, Cheltenham, Leamington) had their chief indication in the prophylactic treatment of the congestive conditions commonly met with in middle life, leading to variously located crises in the digestive, circulatory, and nervous systems.

The Action of Baths in Cardiovascular Disease.

Dr. Fr. SCHMIDT (Hungary), from his experience on Lake Balaton, believed that the most important effects of CO_2 baths were the changes that take

place in vascular tone, and in the rhythm and volume of the pulse. By varying the stimuli in the bath—thermal, chemical, and mechanical—the effect of the bath could be altered at will, so as to increase or diminish the work of the heart. It was probable that with the dilatation of the superficial vessels the coronary arteries were also dilated. The above stimuli could be so combined in the CO_2 bath as to have a purely sedative effect on the nerve centres and were hence often of value in hypertension and even angina pectoris.

Dr. A. MOUGEOT (France) found natural CO_2 baths of special value at the onset of cardiac failure. If properly given they were vasodilator and cardiotonic and could be safely used even in cases of extreme hypertension. He agreed with the German school of hydrology that patients with cardiovascular disease have everything to gain from baths and little or nothing from the ingestion of cold waters.

Dr. KORNMANN (Switzerland) agreed that every balneotherapeutic irritation-complex could be regulated according to its form and time doses, and that in many cases of circulatory disturbance an individual optimum of the circulatory dynamic could be brought about and maintained as a result of bath treatment.

Two discussions took place at the meetings of the Ligue International contre le Rheumatisme:

*The Relation Between Acute and Chronic Rheumatism.**

Docent Dr. JULIUS VON BENCZUR (Budapest) pointed out that the word rheumatism was used to include: (1) diseases of the organs of locomotion, excluding only the nervous and traumatic; or (2) every inflammatory affection about the joints of unknown cause; or (3) diseases produced by chill, irrespective of the common bacterial and metabolic factors. He regarded chronic rheumatism as a chain of constantly recurring reactions to rapidly repeated stimuli. Arthritis and peri arthritis might arise purely from chill. There was a constant struggle between causes and resistance; the weaker the resistance, the stronger was the disease, and the greater was the effect of small causes. He agreed with the French conception, which the Germans also admitted, that certain subjects were "candidates for arthritic disease," by permanent or temporary predisposition from some metabolic irregularity. In such subjects chill might induce acute rheumatism, especially when accompanied by fatigue, which was also an important factor of causation. In the German Army 60 per cent. of cases of acute rheumatism occurred during the first year of service. A common disturbance in all forms of rheumatism was dysfunction of the small arteries and capillaries of the skin, with failure of the normal reaction to cold and heat and disturbance of blood-supply due to atony or hypertonia of these vessels. With reference to age-incidence in Hungary, the period of acute rheumatism was from puberty to 40 years, two-thirds of the deaths occurring between the ages of 5 and 25; muscular rheumatism and neuralgias, from puberty to 60; sciaticas and lumbagos, from 30 to 60; acute and subacute muscular rheumatism, from puberty to the climacteric, and primary chronic arthritis in the 'fifties.

Docent Dr. ERNST FREUND (Vienna) held that acute rheumatism was perhaps decreasing but more often than formerly passed over into a chronic stage in later years, from hereditary or acquired constitution. This was partly a senile change. The chronic cases without heart affection differed from the acute both clinically and prognostically.

Docent Dr. GUNNAR KAHLMETER (Sweden) said that in Sweden the arthritis which ran a chronic course from the outset was far more common than that which followed an acute attack; but it presented clinical features indicative of infection. These were: slight elevations of temperature, blood changes (anæmia, slight leucocytosis with neutrophilia and displacement to the left in earlier cases and relative lympho- and mono-cytosis in more advanced cases, also increased V.S.); chronic endocarditis in 25–40 per cent. cases; emaciation and muscular weakness, and clammy skin. Besides this common (probably infective) form of arthritis, "climacteric arthritis" (probably not infective) was common in Sweden; monoarthritis and osteoarthritis were also to be classed as non-infective. He favoured Weil's view that rheumatic fever is not merely an acute disease but rather an illness like syphilis or tubercle, liable to recurrence in a chronic form after apparent recovery; and he believed that both the acute and chronic diseases might probably be due to a pure infection of the same virus, differing in virulence and the reaction provoked.

*The Hæmatology of Rheumatic Disease.**

Dr. BILKEI PAP (Budapest) agreed that many cases must be attributed to constitutional inferiority or diathesis, probably due to a disturbance of the vegeto-nervous system and which was unable to react towards infection. There was no characteristic blood picture and he therefore held that rheumatic polyarthritis was not a septicæmia. Much importance attached to the chemical and physical analysis of the blood albumins. Increases in fibrinogen and globulin and of flocculation could be measured and used for differential diagnosis. The precipitation (V.S.) test was also of much value. Infective forms of disease showed increased precipitation, but this test gave definitely normal results in degenerative, traumatic, and metabolic rheumatism.

Dr. ARNOLD ZIMMER (Berlin) stressed the frequency of association of arthritis with endocrine disturbance. There were many purely endocrine cases in which no infection was found and many infective cases in which no endocrine trouble was found, but there were many mixed forms differentiated by endocrine reactions, the majority being ovarian. Abderhalden had devised a method for determining the endocrine factor by an examination of the serum. The presence of endocrine albumins like that of other foreign albumins liberated a defensive ferment which destroyed these foreign bodies. The presence of the products of destruction could be measured by an interferometer and it was claimed that very minute alterations in the concentration of the serum could be detected. In healthy serums the proportion of derivatives from the several endocrine albumins was not constant but the relation between the products of the various endocrines was constant. He held that rheumatic cases showed departures from this normal relation.

Dr. ANTON FISCHER (Landesbad Rheumatism Research Institute at Aachen) discussed alteration in the albuminous bodies of the serum from the standpoint that rheumatism was a general disease with undiscovered abnormalities of metabolism. The sedimentation test had clearly differentiated cases showing active and inflammatory processes of every kind, but he had found that non-febrile chronic poly-arthritis gave very high sedimentation rates, although many had no inflammatory symptoms. The explanation of increased sedimentation had still to be determined. It now appeared, however, that this increase was accompanied by a chemical alteration in the white corpuscles, 80 per cent. of cases showing increase of globulin. There was consequently increase of tryptophan and corresponding diminution of cystin. Severe arthritis also showed increased viscosity of the serum. The increase in a chemically different globulin seemed a definite finding. The lowered sugar tolerance observed by Pemberton in acute inflammatory arthritis was associated in the Aachen findings with increased sedimentation rate, but no liver abnormality was discovered. With regard to other blood conditions in rheumatism, Dr. Fischer found no definite changes in acid-base equilibrium, although there was some diminution of the blood alkaline reserve in inflammatory cases. With Pemberton and Race he found normal values for

* See Acta Rheumatologica, Anno I., No. 3, October, 1929. Rotterdam: W. L. and J. Brusse's Uitgeversmaatschappij, N.V.

blood calcium, but observed no increase in excretion of sulphur with Cawadias, nor diminution of basic metabolism with Pemberton. He doubted the value of the Abderhalden method but spoke favourably of the possibilities of an immuno-diagnostic method.

Mr. JOSEPH RACE (Devonshire Hospital, Buxton) communicated some recent work showing that out of 166 cases of "rheum-arthritis" 68 had a count exceeding 9000 white blood cells, mainly leucocytes, but a number of cases had a low count. The latter were generally cases of long duration, showing a poor response to treatment. There was no leucocytosis in climacteric arthritis, and there appeared to be no correlation between increase of white cells and changes in suspension stability (V.S.). Cutaneous immunological tests had been made with filtrates from cultures of various streptococci, with negative results, but further work was eminently desirable.

THE LONDON MEDICAL EXHIBITION.

DRUGS AND PHARMACEUTICAL PREPARATIONS.

(*Continued from p. 895.*)

BOOTS PURE DRUG CO. (Nottingham) had a display of fine chemicals and pharmaceutical preparations, especially prominent being the arsenobenzol preparation approved by the Ministry of Health. Stabilarsan, for vein injection; Sulphostab for subcutaneous and intramuscular injection; and Bismostab, a sterile suspension of pure bismuth in glucose solution. In addition, Hexyl-Resorcinol in special gelatin capsules, liver extract for the treatment of pernicious anæmia, and Ephedrine for use in asthma and hay-fever were prominently displayed, some of them making an imposing show in large vases, while a variety of tablets and pills made an attractive exhibit. Gonococcus vaccines, Chlor-san, a scientifically produced hypochlorite antiseptic which can be used as an oral or a nasal wash and in the bath, a new product, also received attention.—OPPENHEIMER, SON AND CO., LTD. (59, Clapham-road, London, S.W.), had an attractive display of their well-known productions, including Roboleine, a vitamin food with maltose, diastase, nitrogenous and phosphoric compounds; Vitad, a purified unsaponifiable fraction of cod-liver oil; Citragon, for the treatment of gonorrhœa; and therapeutic ointments such as Ung. Renaglandin, hæmostatic and vasoconstrictive, and Ung. Renaglandin anæsthetic, which contains 5 per cent. eucaine lactate.—THE MOND STAFFORDSHIRE REFINING CO., LTD. (Abbey House, Westminster, S.W.), displayed their germicide, for which is claimed complete penetration and harmlessness to tissues with good healing action. Indicated in many skin diseases the preparation is put up in the form of liquid, ointment, and capsules for internal use. Throat pastilles, a soap, and a dental cream of attractive flavour are also among the preparations supplied by this firm.—DIMOL LABORATORIES, LTD. (40, Ludgate-hill, London, E.C.), showed their well-known bactericide, which is claimed to be 35 times more efficient than pure phenol. It is indicated in all bacterial invasions of the intestinal tract, does not produce any toxic effect, and is voided with the fæces. The preparation is put up in the form of pulverettes and is prepared as syrup, pastilles, lavage powder, ointment, and as a dentifrice. In the form of snuff it can be supplied in a neat mechanical bottle for the pocket, so that a prophylactic against nasal infection is always at hand.—BRITISH ALKALOIDS, LTD. (104, Winchester House, London, E.C.), demonstrated their T.C.P. (Trichlorophenylmethyliodosalicyl in H_2O) a powerful germicide which is analgesic, antithermic, keroplastic, non-hæmostatic, non-caustic, and non-toxic. Externally it promotes rapid healing and internally administered in the form of a colloidal emulsion it can be used in all forms of hyperchlorhydria, dysentery, enteritis, and arterio-sclerosis.—W. MARTINDALE (12, New Cavendish-street, London, W.) had a wide selection of pharmaceutical preparations very well displayed. Volume II. of the Extra Pharmacopœia, the nineteenth, which has just been issued, was frequently examined with approval as it is concerned with developments in investigations, experimental research, and diagnosis, and contains much new matter in connexion with all departments of medicine.—THE PINEOLEUM CO., INCORP. (New York City) (BROOKS AND WARBURTON (40–42, Lexington-street, London, W.)), demonstrated Pineoleum, an anodyne, emollient, and deodoriser having the following composition: menthol, 0·520 g.; camphor, 0·520 g.; ol. eucalyptus and glob., 0·520 g.; ol. Zeyland cinn. (Ceylon cinn.), 0·208 g.; ol. dac. cupr. (oil of pine needles), 1·041 g.; aromatics, qs.; liquid petrolatum, 100 c.cm.—WILCOX, JOZEAU AND CO. (51, Great St. Andrew-street, London, W.C.) exhibited many different preparations of Lactéol (Boucard), a lactic ferment, including tablets and liquid in ampoules for intestinal treatment, powder for surgical, nasal, and aural treatment, ovales for gynæcological treatment, and suppositories.—SANDOZ CHEMICAL WORKS (5, Wigmore-street, London, W.). Among the wide selection of pharmaceutical preparations exhibited at this stand may be mentioned Calcium-Sandoz, a calcium salt obtained from an oxidation product of glucose containing 13 per cent. of lime which corresponds to 9·3 per cent. of calcium; this may be given orally, intramuscularly, or intravenously; Allisatin Brand Tablets, a new and tasteless method of administering allium sativum; and Belladenal Brand Tablets, analgesic, anticonvulsive, and hypnotic.—EVANS, SONS, LESCHER AND WEBB, LTD. (50, Bartholomew-close, London, E.C., and 56, Hanover-street, Liverpool), divided their exhibit into three sections: (1) biological products, (2) special preparations, and (3) medicated soaps. The second section included Cascaromat, a concentrated elixir of cascara; Purgoids, small white sugar-coated tablets containing a combination of phenolphthalein, aloin, ipecac., and belladonna which are effective without griping; and Maraphos, a tonic food for children after exhausting illnesses.—CHAS. ZIMMERMANN AND CO. (9–10, St. Mary-at-Hill, London, E.C.) included in their exhibit Posterisan, a local vaccine from *B. coli communis* in the forms of ointment and suppositories for hæmorrhoids; Bilival "Ingelheim," a gall-stone preventive; Chinosol, a water-soluble non-poisonous antiseptic which does not irritate the skin; and Papain "Dega Brand," a digestive ferment active in any media, acid, alkaline, or neutral.—ROBERTS AND CO. (76, New Bond-street, London, W.) presented a number of useful pharmaceutical preparations, including Ferrigen, iron arsenate in ampoules for increasing the number of erythrocytes in anæmic conditions—this is also prepared with the addition of strychnine sulphate; Robuval, an elixir of strontium bromide with an inodorous fluid extract of vallerian, a nerve sedative; and Arcolax, specially selected and cleaned seeds of *Psyllium plantago*, for the treatment of habitual constipation.—THE ANGLO-FRENCH DRUG CO., LTD. (238A, Gray's Inn-road, London, W.C.), displayed a number of products of special interest, including Stannoxyl, Mycolactine, Iodobesin, and Orargol. Of particular note were the Bacte-Phages, the therapeutic bacteriophages of Prof. d'Herelle, available in various combinations for the treatment of bacillary dysentery, intestinal, respiratory tract, and purulent infections; Oleoformine, a cholagogue containing in tablet form cholic acid, hexamine, and sodium oleate; and Bakolyse, a solution of amino-acids and creatinin in ampoules for the treatment of tuberculosis and other states of denutrition.—MODERN PHARMACALS, LTD. (2, Calthorpe-street, London, W.C.), showed Tetrasthenol, an organic combination of iron, arsenic, glycerophosphate, and strychnine for subcutaneous injection in the treatment of anæmia, neurasthenia, and debility; Bicam, bismuth camphorate in ether washed olive oil, for the treatment of syphilis; and Sulfarsenol.—THE SACCHARIN

CORPORATION, LTD. (72, Oxford-Street, London, W.), displayed Novocain, a local anæsthetic for dental and surgical work; Trevalin, a substitute for morphia free from the toxic effect of morphia on the heart; and Caustiscin, for devitalising dental pulp. It is made in varying strengths to suit individual cases and it is claimed to be quite painless in application, while its use obviates arsenical periodontitis.—BRISTOL MYERS COMPANY (112, Cheapside, London). The chief exhibits on this stall were Sal Hepatica, a well-known effervescent laxative which encourages a daily habit by stimulating the biliary flow (it is announced that this preparation is not advertised to the public); Ziratol, an antiseptic of the naphthalene series having approximately three times the germicidal efficiency of carbolic acid while being free from toxic action; and Ipana, an effective tooth paste which contains Ziratol, and thus exercises a germicidal effect, while it hardens spongy and bleeding gums.—GENATOSAN, LTD. (Loughborough, Leicester), the makers of Sanatogen, Formamint, and Genasprin, included in their exhibit a full range of detoxicated and ordinary vaccines, including Anti-Coryza Vaccine Spray and an Anti-Diphtheria, Scarlet Fever, and Whooping-cough Spray for producing local immunity during epidemics. Attention was also drawn to Genozo Tooth Paste for the double purpose of beautifying the teeth and saving the gums.

ENDOCRINES, LTD., and E. H. SPICER AND CO., LTD. (72, Wigmore-street, and at Watford, Herts), showed a wide range of the "Harrower" endocrine preparations including Anabolin for the treatment of high blood pressure and Thymocrin for chronic psoriasis. Among "Homburg" preparations Salvochin and Transpulmin for use in pneumonia were also shown, as well as *B. acidophilus* Emulsion.—ARMOUR AND CO., LTD. (Armour House, St. Martin's-le-Grand, London, E.C.), presented a very attractive display of gland products under the specific name of "Glanoid." Particular attention was called to a concentrated fluid extract of liver, each ounce of which represents 8 oz. of fresh calf liver prepared while containing the natural animal heat.—THE BRITISH ORGANOTHERAPY CO., LTD. (22, Golden-square, London), exhibited a wide range of glandular products, monoglandular and pluriglandular, in the form of Opocaps, soluble capsules for oral administration, and Opojex, ampoules for hypodermic injection. Evatmine for asthma, hay-fever, urticaria, spasmodic affections, and chilblains was also shown, as well as Saccharomycin, a fluid yeast for boils, furunculosis, and acne.—G. W. CARNRICK CO. (Brooks and Warburton, Ltd., 40–42, Lexington-street, W.) displayed endocrine products emphasising the fact that only fresh glands from healthy animals are employed and that all desiccations are made at low temperatures in vacuo. Special attention was directed to a liver extract for the treatment of anæmia, to Incretone, a liquid endocrine tonic, and Hormotone for the relief of many distressing symptoms at the menopause.—CROOKES' COLLOSOLS (22, Chenies-street, London, W.C.) included in their exhibit, among other preparations, Collosol Argentum, Iodine, Calcium, Manganese, and a new combination of petroleum with Collosol Sulphur, presenting a laxative with intestinal disinfectant and deodorant properties.—C. J. HEWLETT AND SON, LTD. (35–42, Charlotte-street, and 83–85, Curtain-road, London, E.C.), showed Hæmorrhaline, an ointment for hæmorrhoids, external and internal; Hormonigen, pluriglandular extracts; Mist. Pepsinæ Co. c. Bismutho, a remedy in gastric disorders; and Evapogens, or medicated skin lotions. Surgical instruments, dressings, and sprays were also exhibited.—PETROLAGAR LABORATORIES, LTD. (Braydon-road, London, N.), presented their Petrolagar, an emulsion containing 65 per cent. of pure liquid paraffin and agar-agar, flavoured and palatable. The oil is atomised by hydraulic pressure in which state it is held by agar-agar. The preparation produces a normal soft, well-moulded intestinal mass.—NUJOL LABORATORIES (Albert-street, Camden Town, London, N.W.). The intestinal lubricant, Nujol, was here demonstrated as a rational and efficient method for the treatment of intestinal stasis, as well as Mistol, a combination of menthol, camphor, and eucalyptol with a pure mineral oil for inflammatory conditions of the nose and throat.—THE ANGIER CHEMICAL CO., LTD. (86, Clerkenwell-road, London, E.C.). Angier's Emulsion, which is petroleum with hypophosphites, is a bland and creamy preparation in perfect emulsion and can be administered in conditions where indicated either undiluted or in any desired beverage. Inquirers were supplied with a well-reasoned pamphlet on coughs and their treatment.—KAYLENE, LTD. (7, Mandeville-place, London, W.), exhibited a colloidally reversible hydrated silicate of alumnia in a state of ultra-microscopical subdivision known as Kaylene, an adsorbent of toxins and the products of putrefactive processes in the stomach and intestines, as well as Kaylene-ol for the elimination of the gastro-intestinal content, and other similar preparations.—VIROL, LTD. (Hanger-lane, Ealing, London). The composition of marrow-fat, glycerin extract of red bone-marrow, malt extract, eggs, lemon syrup, and salts of lime and iron known as Virol received much attention, as did also Virol and Milk in powder form, and Virolax, which is an emulsion of paraffin for use in intestinal toxæmia and its sequelæ.—BENGUÉ AND CO., LTD. (24, Fitzroy-street, London, W.), in addition to Dr. Bengué's Balsam for use in rheumatism, gout, neuralgia, and other conditions, showed Pulmo (Bailly), an organic combination of calcium, phosphorus, and guaiacol for diseases of the respiratory organs, Arhemapecty, a new blood coagulant, Guipsine containing the active principles of fresh mistletoe for arterio-sclerosis, and many other useful preparations.—DR. JOACHIM WIERNIK AND CO. (Berlin) (Coates and Cooper, 41, Great Tower-street, London, E.C.), manufacturers of the "Diwag" medical products, showed Pacyl, a derivative of cholin for administration per os for reducing blood pressure.—THE BATTLE CREEK FOOD CO. (Michigan, U.S.A.) (Coates and Cooper) showed biologic foods, including Lacto-Dextrine, being prepared for changing the intestinal flora by encouraging the growth of fermentative acid-forming bacteria, and Food Ferrin, a new iron food for which is claimed a remarkable efficiency in building up hæmoglobin; THE SICCO CHEMICAL WORKS (Berlin) (Coates and Cooper) exhibited the nutritive tonic food Siccopon, pure hæmoglobin in granule form to which is added lecithin, albumin, calcium lactate, and soluble silicic acid; and REED AND CARNRICK (Jersey City, N.J.) (Coates and Cooper), among other preparations, showed Testacoids containing the hormones or antacoids of the testicle and the active principles of the prostate; Pancrobilin for the treatment of constipation and obstipation; and Analeptine for the treatment of rheumatism, gout, and in uric acid diathesis.—TEMMLER CHEMICAL WORKS (Berlin) (Coates and Cooper) presented, among other preparations, Brosedan, a bromide bouillon indicated in epilepsy, extract of pine needles for bath treatments, and anti-conceptive tablets.—THE DENVER CHEMICAL MANUFACTURING CO. (London, E.) showed Antiphlogistine, for which the properties are claimed of continuous application of moist heat, osmosis, and a power of stimulating the cutaneous reflexes to assist in maintaining the blood and lymph circulation of the part affected while hastening the elimination of toxins.—BISODOL, LTD. (12, Chenies-street, London), exhibited an antacid-digestive under their trade name intended to re-establish the normal alkalinity of the body without danger of systemic disturbance. It contains bismuth subnit., magnes. carb., sodium bicarb., carica papaya, diastase, and ol. menth. pip.

(*To be concluded.*)

HOLLOWAY SANATORIUM.—Lady Midleton, chairman of the Surrey County Nursing Association, recently opened a nurses' home in connexion with the Holloway Sanatorium at Virginia Water. It is a detached building with rooms for 75 nurses, and has cost £35,000.

Correspondence.

"Audi alteram partem."

WHAT BECOMES OF MEDICAL STUDENTS.

To the Editor of THE LANCET.

SIR,—The consternation with which Dr. Graham Little was filled at getting to grips with the subject of his lecture on The Health and Conditions of Work of Medical Students was in some respects an unnecessary emotion. Some years ago I analysed the lives and subsequent histories of the students at St. Thomas's Hospital over a period, and my paper was published in the *St. Thomas's Hospital Gazette*. Sir Squire Sprigge has done the same with regard to a large group of the students at St. George's Hospital.[1] Sir James Paget had previously traced the fate of a large number of St. Bartholomew's students, and with those figures alone was Dr. Graham Little familiar.—I am, Sir, yours faithfully,

EDRED M. CORNER,
Consulting Surgeon to St. Thomas's Hospital.

Beaconsfield, Bucks, Oct. 24th, 1929.

THE NATURE OF BACTERIOPHAGE

To the Editor of THE LANCET.

SIR,—The annotation entitled A Polyvalent Bacteriophage in your issue of Sept. 21st (p. 621) contains several statements which merit some discussion. To begin with, the title itself is subject to criticism. In spite of our lack of knowledge of the nature of the principle, it must be admitted that its action is more in the nature of a virulence. Valence applies only to the degree of combining power of an element or radical. Its biological use is not only rare but does not apply to the action of bacteriophage. Furthermore, the term polyvirulent has found favour among authorities on this subject. In a recent issue of the *Journal of the American Medical Association* an editorial appeared entitled Bacteriophagy as a Therapeutic Agent. Bacteriophagy is the name of an action and not of a substance. This tendency to misuse the terms applied to a now well-known principle is but an indication of the superficiality of the consideration given to a phenomenon, which may be considered as the outstanding contribution of a generation to the sciences of bacteriology and immunology.

Your annotation states "if the bacteriophage will act as a destructive agent of these organisms in vivo the discovery is of immense importance." It has been repeatedly demonstrated that bacteriophage will produce lysis in vivo, hence it may be admitted that the discovery is of immense importance. Does this provoke a widespread willingness to give the principle adequate clinical trial? The annotation further bewails the failure of investigators to perform the clinical experiments which "should not be difficult to devise." Those who have attempted to prove the theories which offer such exceptional promise for the therapeutic value of bacteriophage have not found it impossible to devise adequate experiments. The difficulty has been, and still is, to obtain the necessary clinical material. I venture to state that if any individual or organisation will furnish the opportunity and the means to carry on investigation of the type indicated the answer will not be difficult to obtain nor long delayed. In view of the unusual theoretical considerations, it would seem that the world is a bit slow in seizing the opportunity which has so long been waiting. I have previously expressed the opinion that the explanation for this tardiness lies in the fact that bacteriophages at present available are, for the most part, active against bacteria which do not produce epidemic diseases. This is only true to a limited extent. The problems of cholera and dysentery supply the lack. Such infections, however, are a serious problem only in countries where investigative work on bacteriophage is limited or absent.

There is another factor related to the bacteriophage problem which has been emphasised, as yet, only by myself—namely, the rôle of the bacterial proteins present in bacteriophage filtrates. It is not out of place to point out that bacteriophage as now used contains substances (bacterial proteins) which in themselves, on theoretical grounds, should prove, perhaps, even more effective than the bacteriophage itself. There is much to criticise in the therapeutic experiments thus far performed aside from the failure to provide adequate controls. The fact that any success, however apparent, has attended the use of bacteriophage is in itself an indication of its tremendous potentiality. There is nothing to indicate the size of the dosage nor the method of administration except some undependable therapeutic trials. It has been sufficiently demonstrated that dosage and method of administration are factors intimately concerned with the success of the treatment.

Finally, it may be argued that animal experimentation should provide an answer for some of these perplexing questions. This indeed might prove to be the case could there be found a naturally infectious animal disease of well recognised ætiology against the causative agent of which a bacteriophage was available. Such diseases have been found, but d'Herelle has been practically alone in investigating them. His results merit greater consideration. In the absence of suitable infections in laboratory animals it might be pointed out that where such diseases as cholera, plague, and dysentery occur on a large scale; where the only hindrance to clinical experiment is lack of funds and possibly of organisation; and where the proposed therapeutic agent has been repeatedly shown to be innocuous, there is no logical objection to applying the method. Those workers who have had the vision to carry on the work of bringing recognition to what promises to be an effective agent for the control of infectious disease only ask for an opportunity to provide the controlled experiments that the acceptance of the method demands.

I am, Sir, yours faithfully,

N. W. LARKUM,
Immunologist, Michigan Department of Health.

Oct. 3rd, 1929.

ASPIRATION DURING TONSILLECTOMY.

To the Editor of THE LANCET.

SIR,—In an annotation which appeared in your issue of Oct. 12th (p. 784) mention was made of the possibility of pulmonary infection caused by aspiration during tonsillectomy under general anæsthesia. This prompts me to accentuate the importance of posture during and after the administration of an anæsthetic. The possible danger of inhalation of blood and septic matter from the mouth through the epiglottis should be borne in mind, whether the case be one of general surgery or one concerning the various regions of the mouth alone. It would be best if the patient were never allowed for more than a few minutes to be flat on his back with his face to the ceiling, unless this position is imperative from the surgeon's point of view.

In the induction stage the patient will soon be sufficiently subjective to allow his head to be turned well to one side, and so obviate by gravitation the collection of fluid in the epiglottic region. This position is easily maintained without the use of a pillow for most operations, and in those on the mouth the patient's shoulders, after induction, should be raised sufficiently high on a sand-bag to necessitate a well-arranged and suitable hyperextension of the head to gravitate blood and debris immediately into the inverted upper posterior nasopharynx. This leaves the region of the epiglottis clear of blood and

[1] THE LANCET, 1905, i., 595. The name of the hospital was not given at the time.—ED. L.

saliva, while any excess of fluid can be swabbed out by the surgeon or his assistant from time to time, or by a suction apparatus if preferred, though this procedure is noisy and otherwise unpleasant.

After operation there should be no pillows used, nor should the position be any but the lateral with the head well hyperextended until vomiting or coughing occurs. After this the patient will not be liable to inhale any matter into his trachea. In transit from the operating theatre the patient should always be carried feet foremost if he is to be taken upstairs, and head downwards if going downstairs, for the same reason of keeping fluids and debris gravitating away from the region of the epiglottis, and also for maintaining by gravitation a good blood-supply to the reflex centres.

There is no apparent reason why the lateral position with hyperextension of the head and the use of no pillow should not be insisted upon, even in abdominal operations, the sitting-up position being substituted within 20 minutes or half an hour of the operation

I am, Sir, yours faithfully,

JOSEPH BIRT.

St. James' Court, Buckingham-gate, S.W.,
Oct. 18th, 1929.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—Accompanying a prospectus of a company formed, or about to be formed, for treatment centres for Electrotherapy, Physiotherapy, X ray diagnosis, &c., was a letter said to be addressed to the medical profession. On the back of that letter were two quotations from articles I had written, one in *The Lancet* of March 3rd, and the other in the *British Journal of Actinotherapy*. The use of my name is entirely unauthorised, and I have written to the secretary of the company protesting strongly against the publication of my name without my consent. I am, Sir, yours faithfully,

F. HOWARD HUMPHRIS.

Great Stanhope-street, Park-lane, W., Oct. 23rd, 1929.

THE MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY, LIMITED.

To the Editor of THE LANCET.

SIR,—Dr. Harvey Hilliard's letter in your issue of Oct. 5th (p. 744) raises an ethical question which should receive the careful consideration of all members of this Society.

First: Dr. Hilliard says, "Three important resolutions, of which due notice has been given, are to be moved at this meeting, but have been withheld from the agenda on the notice calling this meeting." In the report of the meeting in your issue of Oct. 12th (p. 798) I see that when Dr. Hilliard sent these to the office to be placed on the agenda of the meeting he was informed that they were matters arising out of the report and need not therefore appear on the agenda, a procedure approved by the legal advisers to the Society. Whether legal or not, surely it is not in the best interests of the Society as a whole that the motions of a member should be withheld in this way. Some might even consider it scandalous.

Secondly: As Dr. Hilliard points out, the board last year decided that they would not be justified in spending the Society's funds in sending out proxies to ensure the re-election of the directors retiring by rotation. They cannot, therefore, logically justify themselves for issuing proxies at the Society's expense this year. Their action in doing so is also the more unfortunate in that one of the motions was one fixing an age-limit of 65 years for directors. If this motion had been carried, four of the seven members of the board would have to retire. On the face of it, therefore, it might be interpreted as a deliberate attempt to keep themselves in office.

The resolution was withdrawn by the mover, Dr. Harvey Hilliard, who stated at the meeting that in his opinion the board had obtained their proxies under false pretences. He would not, therefore, submit his motion to what he considered an unfair vote.

No one would question the right of a board to issue proxies to protect itself as a whole against some attack upon its policy. If, on the other hand, the proxies were sent out to protect the interests of individual members, it is a volte face from the decision of last year.

If this practice is to continue, it seems that the average private member of the Society will never be able to contest the seats vacant upon rotation, because in his case he will have to finance the heavy expense necessary to obtain proxies, whereas the retiring members would be in the comfortable position of having their expenditure met from the Society's funds. Furthermore, the irony of the situation is that the board, in using the Society's funds is, in fact, using in part the candidate's own money deposited with the Society, to contest his election.

For this reason Mr. Steadman's candidature was not pressed to a poll, although he had received over 300 proxies. As one of his supporters, I do not feel that he received fair treatment.

I am, Sir, yours faithfully,

C. BOWDLER HENRY.

Harley-street, W., Oct. 22nd, 1929.

VACCINATION OR INOCULATION AGAINST SMALL-POX?

To the Editor of THE LANCET.

SIR,—In September, 1923, I vaccinated 285 persons (many of them under 18) with the same Government lymph with no ill-results, but the 286th (a girl of 15 years of age) died from encephalitis 15 days after a perfectly normal primary vaccination. The Committee on Vaccination, appointed by the Ministry of Health in 1926, have shown that vaccine virus is present in some brains of post-vaccinal encephalitis, but whether it is associated with some other agent is not quite clear at present. Yet the fact that the vaccine virus has been isolated from some brains of those who have died from post-vaccinal encephalitis naturally raises the question of the danger of using a living virus in vaccination work.

The recommendation of the Committee that vaccination shall be in "one insertion with a minimum of trauma" instead of four insertions has been adopted and recommended by the Minister of Health. It *may* be that this will diminish the risk of post-vaccinal encephalitis, and it would be interesting to know what are the statistics in America where this has been the practice for years, but one is inclined to query the advisability of using a *living* virus at all. We should hesitate to use living staphylococcus or streptococcus however dilute even in one insertion. In the summary of the Committee on Vaccination it is suggested that further research is desirable in exploring the possibilities of the use of a still further attentuated or of a killed virus as an immunising agent. It would be a great relief both to the community and to vaccinators if a killed virus was available for inoculation in place of the living virus as used in ordinary vaccination.

May I ask, through your columns, whether any experiments have been or are being done with the killed virus of vaccinia. Is it possible to produce immunity against small-pox by inoculation of a killed virus?—I am, Sir, yours faithfully,

Oxford, Oct. 26th, 1929. HENRY T. GILLETT.

*** Post-vaccinal encephalitis is rare in the United States; our correspondent remarked a fortnight ago that only four cases had been reported. Little has been published on the use of killed vaccinia virus as a prophylactic; the results of its use so far seem to have been almost negative, and nothing encouraging has come from the more recent attempts. It is true that preventive vaccines of some other viruses have

proved effective experimentally even when the vaccine has been made from virus which has been killed. In some cases, too, a killed vaccine has proved effective in practice when a dose of living virus has been given subsequently and a mild attack of the disease has thus been induced. In some infections including rabies, distemper, foot-and-mouth disease, and fowl plague, a killed vaccine has by itself conferred immunity, but only for a short time. It may be added that a stock of real small-pox virus would be difficult to obtain, and it would need to be free from other chance human diseases.—ED. L.

CONTAGIOUS ABORTION.

To the Editor of THE LANCET.

SIR,—Several references to contagious abortion in cattle and man are found in your recent issues. Rather less than 20 years ago, I think it was, this disease caused dire losses among dairy herds in parts of New Zealand. The United States had suffered previously and from there much instruction was available. It became recognised that an important contributory factor to the disease was insufficient provision of winter feed, leading to debility in the mother just when the calf in utero was making full demands on her constitution. Your authorities emphasise the digestive route of infection; it is an obvious route, but I question whether, once the disease is introduced to the herd, coitus may not be a method of transmission also.

About sixteen years ago in the Auckland province I attended a young primiparous woman for abortion. Her husband was slaughterman in a local butchery, and I knew that a large proportion of the beasts dealt with by him were cows fattened in consequence of sterility, proved or anticipated, following contagious abortion. As there was no other ascertainable cause for abortion in the fairly advanced stage of pregnancy of the patient, I attributed it at the time to contagious abortion transmitted from the cows through her husband. I had no reason to suppose him to be constitutionally affected by the disease.

I may add that the epidemic did good in bringing about a general improvement in method of winter feeding of dairy stock, and the disease is now a much less serious factor than at that time. A chair and teaching to exploit the relationship in disease of man and the lower animals would, I believe, prove of unimagined importance, and lead to wide revision of our social and sanitary methods and new angles of prevention and treatment.

I am, Sir, yours faithfully,
A. H. HALLEN, M.D. Edin.

Alexandra-road, South Hampstead, N.W., Oct. 27th, 1929.

THE BROWN *v.* WHITE BREAD CONTROVERSY.

To the Editor of THE LANCET.

SIR,—As one of the protagonists of whole-meal bread might I suggest that the Medical Research Council finance another series of tests on the respective values of whole-meal and white flour. In this series let the experimenters use a diet similar to that on which millions of our poorer workers in the industrial and mining centres seek to exist. Those who conducted the demonstration on the values of artificial sunlight at the Mansfield Colliery inquired into the feeding habits of the pit boys, and were amazed at the few who ever had fresh vegetables or fruit, the main articles at each meal being white bread, margarine, and tea.

It is well known to all interested in social welfare work that the expectation of life and freedom from disease are very great amongst agricultural labourers, and it is equally appreciated that they have an abundance of Nature's foods. On the other hand, the majority of poorer workers in our crowded areas have very little fresh vegetables or fruit, the bulk of their diet being white bread and preserved foods, all deficient in vitamins. When we reach a stage in which they are able to secure such a varied dietary as the one on which Dr. Hartwell and Prof. Mottram fed their rats, we shall not have the same anxiety as we have to-day about their feeding; but till that fortunate day arrives, I am of opinion that legal action should be taken to ensure that the poor shall have bread in the condition our ancestors were able to obtain it—i.e., with the most valuable vitamins and minerals still in it. I am also certain that the results of the experiment I suggest will prove on the side of brown bread.

I am, Sir, yours faithfully,
BRUCE BRUCE-PORTER.

Grosvenor-street, W., Oct. 26th, 1929.

To the Editor of THE LANCET.

SIR,—There are many like myself convinced believers in the superior nutritional value of whole-meal flour from clinical observation, who must feel sceptical as to the validity of the conclusions drawn by Prof. Mottram and Miss Hartwell from the recent experiments reported in your issue of Oct. 26th. It is surely an accepted fact by all students of nutrition that the various vitamins can only function adequately when the *general balance* of vitamins and other food factors is correct. In these experiments the test diets are, by their own showing, defective on other grounds, and therefore it would seem that the addition of vitamin B to one of them could not be expected to effect any improvement. The absence of a sufficiency of vitamin A alone would deter normal growth and seriously affect the health of the animal.

I venture to hope that experts who hold opposing views to those of Mottram and Hartwell will feel inclined to give the profession their views on these experiments. The clinicians are looking in vain for definite guidance on this vexed question.

I am, Sir, yours faithfully,
S. HENNING BELFRAGE.

Gloucester-place, W., Oct. 29th, 1929.

CLEAN SWIMMING BATHS.

To the Editor of THE LANCET.

SIR,—Belated though it is I greet with pleasure the report of the Ministry of Health on the Purification of the Water of Swimming Baths, which you annotated last week. I regret, however, that no mention has been made in the report of the strenuous, difficult, and prolonged pioneering work carried out at Poplar for over 20 years. Special reports of this work were always forwarded, in accordance with legal requirements, to the Ministry of Health, and it is these which, without doubt, form the basis of the report just issued.

I am, Sir, yours faithfully,
FREDK. WM. ALEXANDER,
Formerly Medical Officer of Health,
Metropolitan Borough of Poplar.

Oct. 26th, 1929.

DUBLIN UNIVERSITY BIOLOGICAL ASSOCIATION.—The opening meeting of the session of this Association was held on Oct. 19th, when the President-elect, Prof. J. Brontë Gatenby, delivered an address on Radium, X Rays, and the Cell. He gave a careful survey of the knowledge of the action of rays on the cell, and related the results of experimental work done in his own laboratory. Prof. John Joly, F.R.S., gave an account of the pioneer work done in Dublin by the use of hollow needles containing radium or radium emanation in treatment, and described recent developments in needle technique. Dr. R. J. Ludford described his work at the Imperial Cancer Research laboratories on the cancer cell. Dr. W. C. Stevenson, Prof. M. R. J. Hayes, Sir William Wheeler, Prof. L. Abrahamson, and Prof. T. G. Moorhead spoke of the several applications of radium and other rays in medical and surgical treatment.

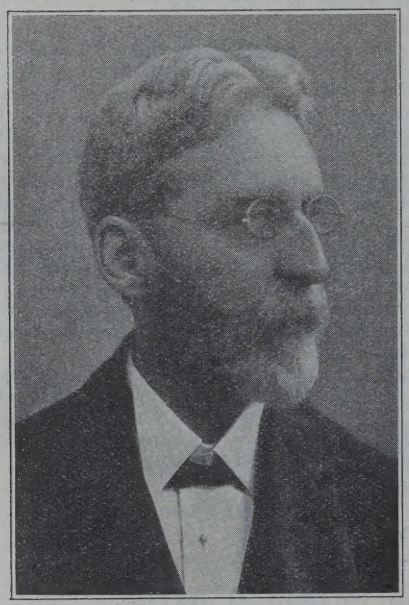
Obituary.

WILLIAM BEVAN-LEWIS, M.Sc. LEEDS, M.R.C.S., L.S.A.,

LATE DIRECTOR OF THE WEST RIDING HOSPITAL, WAKEFIELD.

WE regret to announce the death of Dr. William Bevan-Lewis, the well-known authority on mental disease and its pathology, which occurred on Monday, Oct. 14th, at Cardigan, in the eighty-third year of his age.

William Bevan-Lewis was the son of William T. Lewis, of Cardigan, in which city he was born in 1847, and received his early education. In 1864 he joined the medical school at Guy's Hospital, where, among the prominent members of the staff were then Sir William Gull and Henry Cock, while Wilks, Pavy, and Bryant were junior members. Bevan-Lewis was a distinguished student, being a prize-man throughout his career in the preliminary scientific and clinical subjects, and had to wait until his arrival at the age of 21 before he qualified in 1868 as M.R.C.S. Eng. and L.S.A. He would no doubt have gone far, both in professional and academic life in the metropolis, if an early marriage had not determined his choice of immediate private practice. In 1875, however, an opportunity came to him to pursue scientific studies towards which he had a particular impulse rare in those days, for few medical men half a century ago could have regarded an appointment at a lunatic asylum as offering great scientific opportunities. But with this view Bevan-Lewis, at the age of 28, joined the medical staff of the West Riding or Wakefield Mental Hospital, an institution which had been established some 60 years, and which had already obtained a reputation for the psychological study of its inmates. The medical school at Leeds was only ten miles away, and at Wakefield Ferrier did much of the work which resulted in the publication of his experimental researches in cerebral physiology, while Clifford Allbutt also studied there with fruitful result. Further, two of Bevan-Lewis's predecessors at Wakefield had been distinguished for their scientific output in relation to insanity—namely, the late Dr. H. C. Major, whose work on the histology of the brain in the insane was of real importance both in accomplishment and suggestion, and Sir James Crichton-Browne, the veteran psychologist. In going to Wakefield, therefore, Bevan-Lewis was treading in distinguished footsteps, and he was immediately confirmed in the career which he had adopted. He rose rapidly, first to be pathologist to the hospital, then to be deputy superintendent, and in 1884 he became medical director of the institution. This post he did not resign till 1910, thus completing 35 years of service, 26 of which were spent in the position of the highest responsibility.



DR. BEVAN-LEWIS.

Of Bevan-Lewis's ideals as to what such a post as medical superintendent of a large asylum should mean, there is no doubt alike from the results of his work and the recollections of the many who worked with and under him. From each and all there emerges the same picture of a man whose heart was in his researches, and whose inclination directed him towards the teaching and writing of the knowledge which he had to deliver, but conscientiousness and discrimination alike urged him to devote attention to the organising side of his duties. For he knew that if the advancement of psychology and pathology in relation to insanity were to be obtained, the sure way would be by the intimate study of the subjects of investigation placed beneath his hand. Hence the administrative side of his work was fruitful, including the starting of an out-patient department (then quite a novelty), the reconstruction of the pathological laboratory, the provision of separate wards for the treatment of imbecile cases, and the institution of a well-equipped block for the reception of early cases of mental disease.

While these things would have been sufficient to secure for Bevan-Lewis a high position in his specialty, his memory will be better preserved by his writings and teachings, which expressed the results of his personal and assiduous researches. He was for 25 years lecturer and examiner in mental disease at the University of Leeds, succeeding Crichton-Browne and Major in this post, which later, on the rise of the Leeds school of medicine into a University Faculty, became a professorship. In 1889 he published his well-known text-book of mental diseases, in which he proposed to record the existing knowledge of the pathological aspects of insanity. In this exhaustive work he was stimulated and supported not only by a recurrent staff of interested fellow-workers, but by the presence, as visitors to Wakefield, of a constant influx of young collaborators. This work was recognised on its appearance as practically the first attempt to present in the field of English psychological medicine a résumé of our knowledge of morbid changes in the brain of the insane. It was founded largely on original research, and illustrated with exceptionally good plates, and it was seen at once to supply defects in the treatises, for example, of Bucknill, Tuke, and Clouston. The book was reprinted ten years later, and, although in certain respects the contents were modified, its individual character remained, and this to such an extent that it was easy to hold that work done by others during the interval had not been sufficiently taken into account. But the author's scheme of presentation was simple and serviceable from a psychological standpoint, while, as a matter of fact, certain of the main theories as to minute structure which, when first made seemed to be incompatible with results obtained by experiment, have been since demonstrated by Sir Charles Sherrington and his followers as accurate. Thus and for nearly 30 years Bevan-Lewis had the satisfaction of coming into his own.

Prof. J. Shaw Bolton, Medical Director of the West Riding Hospital, writes:—"I feel doubtfully qualified to write even a brief psychological sketch of the great neurologist whom I succeeded at Wakefield Mental Hospital 19 years ago, for I saw Bevan-Lewis on the day of my election and on no other occasion. I remember vividly my interview with him in his drawing-room, now a dormitory of the institution. He was not in the least the man I had often pictured to myself during the 20 years I had been familiar with his work and reputation, and whose beautiful drawings of the cortex cerebri had first attracted my attention to neurology. He was quiet, dignified, and reserved, and though perfectly courteous, neither volunteered nor provided any information of value regarding the institution and my new duties. I could fully appreciate his point of view. I was a

stranger about to undertake the work he was laying down and of which he was jealously proud; and his main object was to obtain the best terms possible for the staff he was leaving behind him. I parted from him with regret, feeling certain that I should never see him again. I wrote later asking if I could come over before he left Wakefield, but he replied that it was not necessary and that I should find everything in perfect order. A lengthy residence in Wakefield has satisfied me of the truth of this description of a mere interview as a picture of the mentality of Bevan-Lewis. He was an enthusiast, and a recluse with few interests beyond his scientific investigations. He was retiring and aloof, and rarely to be seen or interviewed, but this very attitude towards others, which might have led lesser men to be ignored, in the case of Bevan-Lewis was a powerful factor in the success of his administration. For he was successful, and during his 26 years as medical director he saw, and took a prominent part in, administrative changes and extensions which taken alone would have gained him a high reputation. He witnessed the opening of Menston and Storthes Hall Mental Hospitals, and the planning, building and early years of working of a new mental hospital attached to the Wakefield Asylum of old. He held views on mental hospital evolution which were almost prophetic. As early as 1889 he founded at Wakefield an out-patient department which is still flourishing, and during many years, until in fact the opening of Scalebor Park Mental Hospital rendered the step unnecessary, he provided private mental nurses to the district. Referring in 1889 to the proposal, under the auspices of the London County Council, to erect an acute hospital, providing accommodation for 100 patients, to appoint a staff of experienced visiting physicians, and to establish in connexion therewith a school for the scientific study of mental disease, he remarked:

'It must be admitted that the tendency to the establishment of the hospital system is the correct one, and that this end will be eventually realised. Within the metropolitan area the conditions are so peculiarly favourable to its development that one is surprised at the limited accommodation proposed by its advocates; but as applicable to the provinces, the difficulties of applying the system are obvious, and a modified procedure is necessarily demanded. That the large country asylums should eventually become receptacles for the hopelessly incurable chronic class, officered and managed upon a far more economical system than the present; that special hospitals for dealing with the acute insane, with a well-trained staff of experienced alienists, and affording facilities for a development of clinical teaching should be instituted; and that they should contain centres for scientific investigation and research, are facts so self-evident as to require no further emphasis here.'

"These views found expression in Bevan-Lewis's administration during the next 20 years. He left the chronic block as he found it, an antiquated building surrounded by high walls, and it is doubtful whether he even noticed its sanitary defects, so endeared to him was every brick of Wakefield. In 1900, however, he witnessed the opening of the acute hospital, a modern building replete with what were at that time unique means for research and methods of scientific treatment. This hospital contained a large lecture hall and library and several laboratories, and it possessed extensive provision for electro- and hydro-therapeutic methods of treatment. I believe that to a great extent the new hospital realised Bevan-Lewis's ideal, although its completion came too late to enable him with his enfeebled health adequately to administer it. Bevan-Lewis lived and worked in a world apart, and if he felt and resented the belated recognition accorded to his work on cortical localisation no one knew it. He justly acquired a great scientific reputation, and his position as a neurologist of the highest rank is now at its acme, when it is universally acknowledged that much of his best work waited for a quarter of a century for confirmation and acceptance."

In 1909 Dr. Bevan-Lewis was president of the Royal Medico-Psychological Association, but otherwise, owing partly to early want of recognition and partly to his own retiring disposition, he escaped all public acknowledgment for his valuable services to science and society. He received his reward, and to him it appeared a satisfactory one, in the grateful regard which he obtained from pupils, many of whom became well known and successful in their careers. Throughout his work at Wakefield he was assisted by a devoted wife, Rose Eve, the eldest daughter of Mr. W. C. Kaye, of Enfield, whom he had married when he was only 23 years of age. The loss of his wife occurred some years after his retirement from Wakefield, and was one from which he never recovered. He had no children.

THE NEW TREATMENT FOR BURNS.

A REPORT ON TANNIC ACID.

MANY substances have been used for burns since the time when carron oil was discarded from domestic medicine cupboards. The search has always been for an easily applied dressing that will not only relieve pain and mitigate shock but will have some antiseptic properties and will not require frequent changes. The substances found to have at least some of these desirable qualities vary widely, not only in composition but in physical properties. Among these powdered sodium bicarbonate, ointments spead on lint, paraffin wax applied with a spray, and liquids such as picric acid have had their supporters. It seems probable that these applications will all be replaced as routine methods of treatment by the use of tannic acid, the introduction of which is described by the Medical Research Council as "one of the most important recent advances that have been made in modern therapeutics."[1] Since Dr. E. C. Davidson, of the Henry Ford Hospital in Detroit, first advocated this method four years ago,[2] we have had evidence from various sources substantiating his good results.[3] These have now been confirmed by Mr. W. C. Wilson, who is able to report a consecutive series of 117 cases treated by this method in the department of surgery of the University of Edinburgh. The death-rate from all causes in this series was 11·1 per cent., the mortality in 105 children under 10 years of age being 10·5 per cent. compared with 38·7 per cent. in a series of comparable cases treated by other methods. The tannic acid is used in aqueous solution, which should be freshly prepared for each case (though not necessarily for each application), since after some weeks tannic acid in solution is changed to gallic acid, which has no power to coagulate protein.

The strength recommended is a 2·5 per cent. solution in warm sterile water, sprayed on the affected area, which has been gently cleansed with ether under a general anæsthetic, preferably gas and oxygen. An ordinary nasal spray atomiser can be used and the parts dried by means of electric lamp bulbs in the bed-cage or by a current of hot air from an electric drier. Spraying and drying are carried out at intervals of one hour till the parts are covered with a thin brown layer of coagulated tissue. This usually appears in burns of the second and third degrees after from 8 to 12 applications. In deeper lesions, and also when there is much exudation of serum from the raw surface, further applications may be required to procure a satisfactory coagulum. There is no danger of a too deep corrosive action when a weak solution is used.

In burns of the face the eyes, nostrils, and external auditory meatus are protected with moist wool during spraying.

Local Effects after Treatment.

After the first few applications pain is relieved and disappears. The parts rapidly become insensitive and subsequent spraying causes no discomfort.

[1] The Tannic Acid Treatment of Burns. By W. C. Wilson. Medical Research Council, Special Report Series No. 141. London: H.M. Stationery Office, 1929. Pp. 34. 1s.

[2] Surg., Gyn., and Obstet., 1925, xii., 202.

[3] See THE LANCET, 1928, i., 336 and 351.

The thin brown leathery coagulated layer can be handled freely without risk of conveying infection to the underlying tissues, and its rigid splint-like character ensures the best conditions for the healing processes beneath it. In uncomplicated cases the coagulum should be left until it peels off readily, which it will do within two or three weeks in lesions of the second or third degrees. Areas still uncovered by epithelium are protected by sterile vaseline applied on strips of gauze.

Sepsis.—When sepsis is suspected, from the reddening of the surrounding skin or from the presence of a little sero-purulent discharge from the edge of the coagulum, no special treatment is necessary if the patient's general condition remains satisfactory. Gross infection, which rarely occurs except in association with the formation of sloughs in deep burns, leads to the formation of a collection of pus. The coagulum is pushed up by this pus and can usually be stripped off easily; if it continues to adhere firmly it can be cut away with scissors. In no circumstances should wet dressings be applied over the coagulum.

The provisional instructions for the first-aid treatment of burns by tannic acid will be set out in our columns next week.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 19TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 154 (last week 131); scarlet fever, 3549; diphtheria, 1582; enteric fever, 140 (last week 104); pneumonia, 1042; puerperal fever, 53; puerperal pyrexia, 124; cerebro-spinal fever, 6; acute poliomyelitis, 23; acute polio-encephalitis, 2; encephalitis lethargica, 9; continued fever, 1; dysentery, 10; ophthalmia neonatorum, 112. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Oct. 22nd–23rd was as follows:—Small-pox 163 under treatment, 9 under observation (last week 166 and 3 respectively); scarlet fever, 2464; diphtheria, 2242; enteric fever, 69 (last week 39); measles, 186; whooping-cough, 131; puerperal fever, 23 (plus 13 babies); encephalitis lethargica, 126; poliomyelitis, 8; "other diseases," 20. At St. Margaret's Hospital there were 16 babies (plus 8 mothers) with ophthalmia neonatorum.

Of the notifications of enteric fever, 30 were received from the County of London—namely, Hackney, Islington, Lambeth, Paddington, St. Marylebone, Wandsworth, and Westminster each 1, Stepney 2, and Lewisham 21.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 7 (3) from enteric fever, 14 (0) from measles, 8 (2) from scarlet fever, 13 (1) from whooping-cough, 31 (6) from diphtheria, 136 (35) from diarrhœa and enteritis under two years, and 40 (7) from influenza. The figures in parentheses are those for London itself.

Deaths from diarrhœa are now definitely on the decline, the highest figures being reported from Liverpool 11, Birmingham 9, and Leeds 5, while Glasgow and Dublin report 8 each. The deaths from enteric fever outside London were reported from Bournemouth, Bristol, Salford, and Leeds 1 each; the 4 deaths in London occurred at Lewisham, where the outbreak to date (Oct. 29th) amounts to 64 cases with 5 deaths.

The number of stillbirths notified during the week was 257 (corresponding to a rate of 39 per 1000 births), including 48 in London.

VETERINARY RESEARCH AT LIVERPOOL.—The University has received £10,000 for research to be conducted under the direction of the William Prescott Professor in the Department of Veterinary Pathology. This sum represents contributions of £6000 and £3000 from two anonymous donors, and £1000 from Messrs. R. Silcock and Sons, Ltd., of Liverpool.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

REASSEMBLY OF PARLIAMENT.

BOTH Houses of Parliament reassembled for the autumn session on Tuesday, Oct. 29th. The Government have in hand a considerable programme of legislation which they intend to pass before the Prorogation next July. Among the more important Bills are two dealing with Slum Clearance and Reform of the Factory Laws. These measures are likely to be introduced before Christmas, but it will depend upon the progress made with other Bills whether they proceed any further before the reassembling of Parliament early in the New Year.

The Government's Programme.

Mr. SNOWDEN, in announcing the Government's programme of business, said that it was proposed to proceed with the Unemployment Insurance Bill before the Christmas adjournment. It was hoped to make progress with other measures foreshadowed in the King's Speech, including the Factories Bill, to regulate hours of industrial employment. The financial resolution in connexion with the Highlands and Islands Medical Services (Additional Grants) Bill would be placed on the Order Paper on the following day, and a White Paper would also be available.

Notices of Motion.

In the ballot for notices of motion Lieut.-Colonel FREMANTLE gave notice that to-morrow week (Nov. 6th) he would call attention to ribbon development and move a resolution. Mr. T. HENDERSON also gave notice of a motion on the nationalisation of water-supply.

HOUSE OF COMMONS.

TUESDAY, OCT. 29TH.

Voluntary Hospitals and Motor Accidents.

Sir WILLIAM DAVISON asked the Minister of Transport whether, in view of the serious cost and difficulties thrown on voluntary hospitals throughout the country in the receiving and treating of persons suffering from motor accidents, and also in view of the fact that in very many cases no payment is made to the hospital in question by such persons for their treatment in the hospital, His Majesty's Government would consider the propriety of raising a central fund by means of a small deduction from driving licences, or otherwise, with a view to adequate payments being made to voluntary hospitals who are unable to obtain payment for services rendered in the case of motor accidents.—Mr. HERBERT MORRISON replied: I do not feel justified in recommending the legislation which would be required to impose a compulsory levy on the drivers of all motor vehicles for this purpose.

Sir WILLIAM DAVISON asked if the Minister of Transport did not recognise the serious position that many hospitals were in by reason of their often keeping a special ward, particularly in the country, to deal with motor accidents which interfered with the normal work of the hospitals, and was a great expense to them, when they were already finding it difficult to pay their way. He also asked if the Minister could not introduce some clause at any rate in the legislation which he had promised with regard to third-party insurance, which would deal with this matter.—Mr. MORRISON replied that they all recognised the financial difficulties of voluntary hospitals, but he was unable to agree that that was a question which exclusively related to the services required from the hospitals by motorists.

Mr. THURTLE asked if one of the remedies in this matter would not be for motorists to take more care.

Mr. ALBERY asked the Minister to consider the propriety of approaching the Automobile Association and the Royal Automobile Club with the suggestion that they should try to devise some means of collecting these sums for the hospitals.—Mr. MORRISON replied that there was no reason to believe that motorists as a class were less generous in their contributions towards the hospitals than any other section of the community, and it would be difficult to single them out from other users of the hospitals.

Mr. LOUIS SMITH asked the Home Secretary if he would obtain information from the police of the country of the number of accidents treated in local hospitals and resulting from the use of motors during the months from April to the middle of October, with the object of ascertaining the burden now placed on those institutions.—Mr. CLYNES replied: I have consulted my right hon. friend the Minister of Health, and am advised that the collection of the figures

the hon. Member mentions would not secure the object he has in view; and as the figures could not be obtained without imposing great labour on the police, out of all proportion to the usefulness of any results that can be anticipated, I regret that I do not see my way to ask the police to furnish them.

Government and Slum Clearance.

Lieut.-Colonel FREMANTLE asked Mr. Snowden, Chancellor of the Exchequer (who is acting for the Prime Minister) whether the much-promised measure for slum clearance was included in what the right hon. gentleman called "minor Bills," or if it was not considered of sufficient importance to be introduced before Christmas.—Mr. SNOWDEN replied that he certainly would not include the Slum Clearance Bill among the minor measures to which he had referred. He hoped that when the Bill was introduced it would be recognised that it was a Bill of first-rate importance. The programme which the Government had outlined, and which they hoped to get through with the assistance of the Opposition, so far as their proposals met with approval, was rather ambitious. He could assure the House that the Slum Clearance Bill would be taken as soon as Parliamentary time permitted.

Procedure at Coroners' Inquests.

Sir KINGSLEY WOOD asked the Home Secretary whether he was aware of the considerable public apprehension concerning the recent conduct and procedure of certain coroners' inquests, particularly in relation to the ancient and well-established rights and liberties of the subject, and whether he could make any proposals or statement to the House on the matter.—Mr. CLYNES replied: I am obliged to the right hon. gentleman for his courtesy in giving me long notice of this question, and thus affording me the opportunity of consulting with my noble friend, the Lord Chancellor, and my hon. and learned friend, the Attorney-General, upon the legal aspects of the matter. As the right hon. gentleman is no doubt aware, the law relating to coroners' inquests was revised and brought up to date by a comprehensive measure passed only three years ago. The view in which the authorities I have consulted concur is that it would be a mistake so soon after the revision of the law to consider making another fundamental alteration because of what has happened in one or two quite exceptional cases. The provision under which coroners pursue their inquiries up to the point of enabling the jury to find the persons, if any, who have been guilty of murder or manslaughter, embodies the ancient common law of England. Having regard to the number of inquests held every year—over 30,000 in 1927—the criticisms of the working of this provision have been remarkably few, and, on the other hand, there have been very many cases in which its value has been clearly demonstrated. I propose, therefore, as at present advised, to take no action in the matter.

War Pensioners and Seven Years' Limit.

Mr. DAY asked the Minister of Pensions whether he was now in a position to make an announcement with reference to the Government's attitude regarding the abolition of the seven years' limit with reference to ex-Service men; and whether it was proposed to obtain powers to remove other pension grievances, including the amendments to the final awards regulations in the case of war orphans.—Mr. F. O. ROBERTS replied: I expect to be able very shortly to make a full statement on the point raised in the first part of the question. I am at the same time giving close attention to all difficulties that have been put before me in connexion with the administration of war pensions, and I shall do what is possible from time to time to remedy them.

University Graduates and Choice of a Career.

Mr. GRAHAM WHITE asked the Minister of Labour if she would circulate to the proper authorities at the universities periodical reviews of the various branches of industry and the professions, in order that undergraduates might be enabled to make plans for their future at a suitable time.—Miss BONDFIELD replied: The hon. Member is perhaps aware that my department, in collaboration with the Incorporated Associations of Headmasters and Headmistresses, recently began to issue through H.M. Stationery Office a series of pamphlets on the choice of careers. Copies of these are being sent to University Appointments Boards and to all secondary schools on the "recognised" list of the Board of Education. I will gladly supply the hon. Member with a list of these pamphlets so far as they have been completed, if he so desires.

Administration of the Factory Acts.

Mr. GRAHAM WHITE asked the Prime Minister if it was the intention of the Government to transfer the administration of the Factory Acts to the Ministry of Labour.—Mr. SNOWDEN replied: This matter has not been under the consideration of the Government.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful:—

Surgery.—A. Buch and R. F. M. Child, St. Mary's Hosp.; V. J. H. Coidan, Beyrout; R. W. Goldsbrough, Leeds; A. Guirdham, Charing Cross Hosp.; H. C. Halge, St. Mary's Hosp.; G. A. F. Holloway and A. Kellner, London Hosp.; and R. K. Nandlal, Birmingham.

Medicine.—W. T. Ellis, Manchester and Charing Cross Hosp.; W. J. Frith, London Hosp.; A. Guirdham, Charing Cross Hosp.; W. M. Hamer, Manchester and Charing Cross Hosp.; W. St. A. Hendricks and R. J. Kagan, St. Mary's Hosp.; H. W. Maurer, Charing Cross Hosp.; T. M. White, Bristol; and F. A. Yarde, St. Mary's Hosp.

Forensic Medicine.—A. N. De Monte, St. Mary's Hosp.; W. J. Frith, London Hosp.; B. C. Ghose, Durham; R. Gilmore, Manchester; A. Guirdham, Charing Cross Hosp.; W. St. A. Hendricks, St. Mary's Hosp.; G. A. F. Holloway, London Hosp.; C. Hortop and A. D. H. Hugo, Guy's Hosp.; A. Liberis, St. Bart.'s Hosp.; W. McDermott, London Hosp.; J. E. Moody, St. Mary's Hosp.; L. J. Pearson, Birmingham; T. G. Robinson, Guy's Hosp.; L. C. H. Sykes, Leeds; and F. A. Yarde, St. Mary's Hosp.

Midwifery.—M. Asaad and R. F. M. Child, St. Mary's Hosp.; A. Clark, Glasgow and London Hosp.; C. E. P. Davies, Guy's Hosp.; A. N. De Monte, St. Mary's Hosp.; H. R. Fosbery, Middlesex Hosp.; A. Guirdham, Charing Cross Hosp.; J. E. R. Heppolette, St. Mary's Hosp.; G. A. F. Holloway, London Hosp.; D. W. Hoodless, Charing Cross Hosp.; V. J. Lopez, St. Mary's Hosp.; W. McDermott, London Hosp.; L. J. Pearson, Birmingham; and S. Ramadas, St. George's Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: A. Clark, A. N. De Monte, W. T. Ellis, R. W. Goldsbrough, A. Guirdham, W. M. Hamer, W. St. A. Hendricks, G. A. F. Holloway, C. Hortop, W. McDermott, and T. M. White.

UNIVERSITY OF EDINBURGH.—At a graduation ceremonial on Oct. 26th the following diplomas were conferred:—

D.P.H.—H. J. Gibson, *David Lennox, *K. A. T. Martin, Sarup Narain and N. S. Turnbull.

* In absentia.

UNIVERSITY OF SYDNEY.—Dr. H. Whitridge Davies, who for the last three years has been lecturer in physiology and pharmacology in the University of Leeds, has been appointed to the Chair of Physiology at the University of Sydney.

Dr. Davies is an Australian by birth, and is the son of Mr. Harold Davies, professor of music at the University of Adelaide. After graduating at Adelaide, he came to Europe with the Australian Army Medical Corps, and served in France. He subsequently became research assistant to Dr. J. S. Haldane, at Oxford, and in 1921 he worked in the Department of Therapeutics in the University of Edinburgh under Prof. Jonathan Meakins. Later he spent a year at the Rockefeller Institute, New York.

RADIOLOGICAL CONGRESS IN LONDON.—The annual congress of the British Institute of Radiology, incorporated with the Rontgen Society, will be held at the Central Hall, Westminster, from Dec. 4th to 6th. There will be a trade exhibition of X ray apparatus. The Silvanus Thompson and Mackenzie Davidson memorial lectures and other addresses will be given in the Congress Hall adjoining the exhibition.

LORD MOYNIHAN ON VOLUNTARY HOSPITALS.—Speaking at Dewsbury on Oct. 15th, Lord Moynihan said he believed we had now arrived at the most critical period in the history of hospital administration in this country. Hitherto it had required a confession of pauperism to allow a patient to receive benefit from the poor-law hospitals, but under the new Local Government Act the work of all the hospitals could be coördinated, the number of available beds doubled, and the disgrace of long waiting-lists removed. It was the hope of the medical profession that the standards and ideals of the voluntary hospitals would guide and inspire the work of the old poor-law institutions under the new control. It must be recognised, however, that physicians and surgeons required for the adequate staffing of these hospitals did not at present exist. Special and arduous training was needed before a man could undertake consulting duties, and the responsible authorities must go slowly at first and increase only at the rate at which fully qualified persons became available for the work. General practitioners should be given greater facilities for keeping in touch with their patients under treatment, and for following the practice of the hospitals so as to keep themselves abreast of the advances of medicine. The great imperfection of the National Health Insurance Act from the medical standpoint was that it gave the practitioner no chance of availing himself of hospital practice or of getting post-graduate training.

UNIVERSITY OF LONDON.—At a meeting of the Senate on Oct. 23rd the degree of D.Sc. in Medical and Vital Statistics was conferred on Mr. A. B. Hill, of the London School of Hygiene and Tropical Medicine.

CHELSEA CLINICAL SOCIETY.—The annual dinner of this society was held on Oct. 22nd at the Hotel Rembrandt, with Mr. L. A. Harwood, the President, in the chair. Dr. J. F. Halls Dally, President of the West London Medico-Chirurgical Society, proposed "The Chelsea Clinical Society and its President." The toast "The Visitors," proposed by Dr. K. E. Eckenstein, was responded to by the Lord Chief Justice and Lieut-General H. B. Fawcus.

PRINCE OF WALES'S HOSPITAL DINNER.—The annual dinner of the Prince of Wales's Hospital Re-union Association will be held at the Holborn Restaurant on Thursday, Nov. 21st, at 7.45 for 8 P.M., with Mr. T. H. C. Benians in the chair. Those wishing to be present are asked to inform Dr. Bruce Williamson, 137, Harley-street, W.1, stating the number of guests they are bringing.

LEEDS MEDICAL SCHOOL DINNER.—The forty-sixth annual dinner of the past and present students of the Leeds School of Medicine will be held under the presidency of Mr. S. W. Daw, at the Hotel Metropole, Leeds, on Friday, Nov. 8th.

ROYAL DENTAL HOSPITAL OF LONDON.—The annual dinner of the staff and past and present students of this hospital will be held at 6.30 for 7 P.M. on Saturday, Nov. 23rd, at the Trocadero Restaurant, Piccadilly-circus, with Mr. W. J. May in the chair. The medical committee will be at home to past and present students on the same day from 9.30 A.M. to 5 P.M. In the morning demonstrations will be given, and in the afternoon orthodontic and other cases will be shown.

THE SOCIETY OF APOTHECARIES.—A livery dinner of the Society was held in the Apothecaries Hall on Tuesday, Oct. 29th, when the Master, Lieut.-Colonel C. T. Samman, R.A.M.C., presided over a company which included, among others, the American Chargé d'Affaires, the Presidents of the Royal College of Physicians of London, the Royal Society of Medicine, the Medical Society of London, the British Medical Association, the Medico-Legal Society and the Harveian Society, the Director-General of the Army Medical Service, and the Master of the Drapers' Company. Col. Samman was supported by Prof. W. E. Dixon, officiating as senior warden in the absence of Sir George Buchanan, and Colonel E. C. Freeman, the junior warden. The dinner was exceptionally large, inasmuch as two interesting events marked the occasion—namely, the award to Prof. John Jacob Abel, of the Johns Hopkins University, Baltimore, of the Society's gold medal in pharmacology and therapeutics; and the presentation to Sir Humphry Rolleston of the Freedom of the Society. The unusual size of the gathering was, however, conveniently met, owing to the extensive reconstruction of the mediæval premises in Water-lane, which, at the expense of much energy and money, possess now the amenities for such functions, while losing none of their ancient charm. The speeches being necessarily large in number were kept proportionately short.

After the loyal toasts the Master in a few words outlined the history, position, and future hopes of the Society, after which Mr. Ray Atherton, of the American Embassy, received the medal of the Society on behalf of Prof. Abel, and responded sympathetically to the expressions of cordiality between his country and Great Britain which, when manifested in the Master's speech, were endorsed by all the company.

Prof. Dixon then formally presented Sir Humphry Rolleston to the Master in words appreciative of the way in which the Regius Professor of Physic at Cambridge had discharged, and was discharging, so many important duties. The Master then conferred the Freedom of the Society upon its distinguished guest, an honour which that guest accepted characteristically by saying nothing whatever about his responsibilities, but telling two excellent short stories.

The toast of the Royal Colleges was proposed by Dr. Cecil Wall, who brought out the friendly relations that now existed between the Colleges and the Society whatever dissensions in the past might have arisen during the development of their histories. Sir John Rose Bradford, replying for the Royal College of Physicians of London, confirmed this view in detail, and Sir Holburt Waring, representing the Royal College of Surgeons of England, while repeating these sentiments, was opportune in pointing to the failure of the metropolitan medical schools, despite the united view of the three diploma-granting bodies, to set in motion an adequate and practical scheme of post-graduate education

The evening closed with brief responses by Lord Dawson of Penn and Lord Riddell to the toast of the Guests.

OXFORD OPHTHALMOLOGICAL CONGRESS.—This Congress will be held next year on July 10th, 11th, and 12th.

NATIONAL RADIUM TRUST.—At a meeting of the Trust, held on Oct. 23rd, Dr. Comyns Berkeley and Dr. J. W. W. Morrison, members of the Commission, were coöpted to be members of the Trust.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.—An address on the Dual Basis of Conduct will be given by Sir Herbert Samuel, M.P., on Tuesday, Nov. 12th, at 8.15 P.M., at Conway Hall, Red Lion-square, Kingsway, London, W.C. Tickets may be had from the hon. secretary, 88, Kingsway, W.C. 2.

"ALEXANDRA DAY" FUND.—Notwithstanding the bad weather on Alexandra Day and the difficulties created by the General Election, the net result of the collections in London on June 12th constituted a "record." The total receipts were £59,084: after payment of expenses, including £7427 paid for roses made by cripples, the net proceeds were £49,870—£1741 more than last year.

A HOSPITAL FILM.—The Hospital Saving Association has informed King Edward's Fund that the propaganda film "A Hundred Years of Progress" has been shown almost continuously since February, 1928, sometimes at three or four cinemas simultaneously. There has usually been a short talk after the film has been shown, describing what the working-classes owe to the hospitals and how they can best help to support them. The propaganda has added about 100,000 regular subscribers to the list.

ROYAL NORTHERN HOSPITAL.—The post-graduate lectures at this hospital begin again on Tuesday, Nov. 5th, at 3.15 P.M., and continue at the same time nearly every week until March, 1930. During the week, Dec. 2nd–6th, lectures and demonstrations will be held daily at 2.15 and 3.15 P.M. Notices of the various lectures, all of which are open free to practitioners, will appear weekly in our Medical Diary. A full programme may be obtained on application to the Dean of the hospital.

FOULERTON RESEARCH STUDENTSHIP.—If candidates of sufficient merit present themselves, the President and Council of the Royal Society propose to appoint a Foulerton Research Student who shall conduct research in medicine or the contributory sciences. The studentship is tenable for three years, is open to men or women of British nationality, and carries a salary of £700 a year. Application must be made before Dec. 9th, and further particulars may be had from the assistant secretary of the Royal Society, Burlington House, London, W.1.

CONFERENCE ON OPIUM AND DANGEROUS DRUGS.—A conference on the international control of opium and dangerous drugs is to be held at the London School of Economics on Wednesday, Nov. 13th. It is being arranged by the Women's International League, which has taken up the study of the question of opium in response to an appeal from the Chinese Anti-opium Society. There will be speakers from India, China, and Egypt, and those giving addresses will include Mr. P. J. Noel Baker, M.P., and Mr. Lyall, Chairman of the Permanent Central Opium Board of the League of Nations. Admission is free, and seats will be reserved on request to the secretary of the League, 55, Gower-street, London, W.C.1.

HONOUR FOR A MEDICAL MAN.—On Oct. 16th the Honorary Freedom of the Borough of Kingston-on-Thames was conferred on Dr. Roger Neville Goodman in recognition of what he has done for the town. In opening the proceedings the Mayor recalled Dr. Goodman's long and unsparing labour for the local schools and his services to the Victoria Hospital and the Kingston Nursing Association. His work, said the Mayor, had sought no publicity and had received little civic recognition because through its continuance and excellence it had been taken for granted. It would nevertheless stand as a memorial for all time, and his fellow-townsmen wished to pay its author the highest compliment in their power. Dr. Goodman in his response said that the honour might be explained by the fact that he belonged to the medical profession. He was glad to accept it as one not only to himself but to the other members of that profession in Kingston. At the subsequent banquet Sir George Penny, M.P., spoke of the untiring energy and great abilities which Dr. Goodman had devoted to his fellows. The new Freeman replied that his epitaph had already been written; it was "He did not know." He would like to have added "but he was willing to learn."

Since 1895 the Freedom of Kingston has been conferred only on eight persons—namely, Lord Selby, the Duke of Cambridge, Andrew Carnegie, W. E. Green, Lord Baden-Powell, Lord Cave, Lord Haig, and Dr. Goodman.

HOSPITAL COÖPERATION AT NEWCASTLE.—An advisory committee representative of the voluntary hospitals of Newcastle-on-Tyne has been formed to coöperate with the municipality in hospital matters, especially for the prevention of overlapping and for making the best use of the available beds. It is pointed out that, while Newcastle Royal Infirmary has a waiting-list of 2000, there are other voluntary hospitals, fully staffed, not many miles away, with many unoccupied beds.

SCHOOL HYGIENE IN GLASGOW.—Mr. John Clark, LL.D., who has just retired from the position of Director of Education in Glasgow, was entertained last week to a complimentary luncheon by his many friends in Glasgow, medical and otherwise, in recognition of his enthusiasm in promoting the teaching of hygiene at the training colleges. Both the system of medical examination and the treatment of school-children owe a great deal to his intelligent sympathy and encouragement. He had personal experience of American methods and admittedly education in Glasgow will miss his driving force.

TRELOAR CRIPPLES' HOSPITAL.—Lord Ampthill, Pro-Grand Master of the United Grand Lodge of England, last week, with masonic ceremony, laid the foundation-stone of the new wards of the Lord Mayor Treloar Cripples' Hospital and College at Alton, Hants. The new buildings will replace the present worn-out wooden huts; they will accommodate 355 crippled children besides 50 crippled boys who are being trained in the college, and will cost £100,000. Last week, also, the coming-of-age dinner of the hospital took place at the Mansion House, under the presidency of the Lord Mayor. It was then stated that since 1908 the hospital had dealt with 5000 children, 95 per cent of them successfully.

GRANGETHORPE HOSPITAL CLOSED.—Grangethorpe Hospital, Manchester, one of the best-known war hospitals in the country, has after 11 years finally closed its doors, the last patients being transferred elsewhere. During this time 15,000 men have received treatment in the hospital and 7000 operations have been performed. Before the war it was a private residence, and in 1918 it was bought for £11,000 by the trustees of the East Lancashire Homes for Disabled Sailors and Soldiers. For some years the work has been carried on under the authority of the Ministry of Pensions. The building has been presented to the Manchester Royal Infirmary, but it has not yet been decided how the hospital will be utilised. A suggestion has been made that it should be converted into a hospital for middle-class patients who cannot afford nursing-home fees yet wish to pay for treatment.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, Nov. 7th.—4.30 P.M. *The following papers will be read*:—W. A. Lamborn: The Remarkable Adaptation by which a Dipterous Pupa (Tabanidæ) is preserved from the Danger of Fissures in Drying Mud (communicated by E. B Poulton); H. E. Roaf: The Absorption of Light by the Coloured Globules in the Retina of the Domestic Hen (communicated by Sir Charles Sherrington); R. G. Tomkins: Studies of the Growth of Moulds. I. (communicated by Sir William Hardy); R. H. Stoughton: The Morphology and Cytology of Bacterium Malvacearum E.F.S. (communicated by Sir John Russell); E. C. Smith: On the Coagulation of Muscle Plasma (communicated by Sir William Hardy). *The following papers will be read in Title only.*—Sunder Lal Hora: Ecology, Bionomics and Evolution of the Torrential Fauna (communicated by J. H. Ashworth); N. J. Berrill: Studies in Tunicate Development. Part I. (communicated by D. M. S. Watson); J. C. Kernot, J. Knaggs and Madge Kaye: The Swelling of Fish Skins in Solutions of Inorganic and Organic Acids (communicated by Sir William Hardy); A. V. Hill: Anaerobid Survival in Muscle; A. V. Hill and P. Kupalov: Anaerobic and Acrobic Activity in Isolated Muscle; Sybil Cooper and D. Denny-Brown: The Interaction between two Trains of Impulses converging on the Same Motoneurone (communicated by Sir Charles Sherrington); C. H. Best and Ruth Partridge: Observations on Olympic Athletes (communicated by A. V. Hill); H. S. Holden: On the Structure and Affinities of Ankyropteria Corrugata (communicated by D. H. Scott); W. R. I. Cook and E. J. Schwartz: Life-history, Cytology and Method of *Plasmodiophora brassicæ* Woron, the Cause of Finger and Toe Disease of Cabbages and other Crucifers (communicated by E. J. Butler); R. Broom: On the Structure of the Mammal-like Reptiles of the Suborder Gorgonopsia; H. K. Mookerjee: On the Development of the Vertebral Column of Anura (communicated by E. W. MacBride); H. K. Mookerjee: On the Development of the Vertebral Column of Urodela (communicated by E. W. MacBride; R. R. Gates and F. M. L. Sheffield: Megaspore Development in Œnothera Rubricalyx (communicated by Sir John Farmer); C. F. A. Pantin: On the Physiology of Amœboid Movement. I., II. and III. (communicated by E. J. Allen); O. Rosenheim, and N. K. Adam: Monomolecular Films of Irradiated Ergosterol in Relation to the Production of Vitamin D.; R. N. Mukerji: Effect of X-Radiation on the Spermatogenesis of Lepisma Domestica (communicated by J. P. Hill); J. B. Gatenby, R. N. Mukerji, and Sylvia Wigoder: The Effect of X-Radiation on the Spermatogenesis of Abraxas Grossulariata (communicated by J. P. Hill).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 5th.—8.30 P.M., ORTHOPÆDICS. Presidential Address: Mr. D. McCrae Aitken: Respiratory Rhythm in Physiological Relation to Movement and Posture, with Suggested Applications to Treatment. (Illustrated by cinematograph.) 8 P.M., PATHOLOGY. Laboratory Meeting at St. Mary's Hospital (Inoculation Department), W. Communications:—L. Colebrook: Sterilisation of the Hands. R. M. Fry and E. H. Davey: The Vernes Test for Tubercle. J. Freeman: Rush Inoculation. R. Hare: Variations in Streptococcal Cultures. I. Maclean: A Bacillus Found in Dental Granulomata. G. Roche Lynch: An Electrolytic Marsh Apparatus for the Estimation of Minute Amounts of Arsenic, Using a Mercury Cathode. Demonstrations:—Sir Almroth Wright: Intertraction. A. Fleming and S. Craddock: The Use of Penicillin in the Isolation of Some Bacteria. G. E. Harre: Human Tar Cancer. D. M. Pryce; The Halo Method of Mensuration. W. D. Newcomb and J. W. Orr: Recent Pathological Specimens. F. T. Ridley: Ossification in the Choroid.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Papers: Mr. W. J. Bishop: English Physicians in Russia in the Sixteenth and the Seventeenth Centuries. Dr. J. F. Fulton: Edward Selleck Hare (1812–38) and the Syndrome of Paralysis of the Cervical Sympathetic. 8.30 P.M., SURGERY. Discussion on Surgery of the Spinal Cord. Opener: Mr. Hugh Cairns. Speakers: Mr. Donald Armour, Mr. Geoffrey Jefferson, Sir Percy Sargent, and others.

THURSDAY.—5.30 P.M., TROPICAL DISEASES. Prof. A. C. Ukil: Epidemiology and Pathology of Tuberculosis in India (illustrated by lantern slides). Dr. G. Giglioli (provisionally): Paratyphosus C Infections in British Guiana—Sterile Abscess in Treatment (demonstration of specimens—lantern slides). Dr. W. Broughton-Alcock: Section Showing Structures Morphologically Resembling Spirochætes of a Species Common to the Mouth, Lying Deep Within the Mucous Membrane (for opinion). N.B.—Change in hour of Meeting.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 5 P.M.) Cases: Dr. C. Worster-Drought: Von Recklinghausen's Disease with Large Cervical Tumour. Dr. H. V. Morlock: Albinism with Enlarged Spleen; Congenital Syphilis with Anæmia. Mr. Cecil P. G. Wakeley: Osteomyelitis Treated by Bone Graft; Cirrhosis of the Liver After Talma-Morrison Operation. Dr. Gerald Slot: Congenital Heart. Mr. R. Rutherford: Late Rickets with Fractures. Dr. Terence East: Hæmophilia. Dr. L. S. T. Burrell: Von Recklinghausen's Disease. Dr. A. J. Scott Pinchin: Case of Coronary Thrombosis with Ventricular Aneurysm; Case for Diagnosis 8.30 P.M. OPHTHALMOLOGY. (Cases at 8 P.M.). Papers: Dr. Cammidge: Retinitis in Diabetes. Mr. Tudor Thomas and Mr. M. S. Mayou: Sarcoma of the Iris. Mr. M. S. Mayou: Sarcoma of the Iris. Cases and Demonstrations: Miss Hamilton McIlroy: Case of Hereditary Ptosis with Epicanthus. Mr. Tudor Thomas: A Steriliser for Ballantyne's Drop Bottles: A Pair of Prismatic Spectacles. Other cases will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, Nov. 5th.—5 P.M., Dr. J. A. Arkwright: The Virulence of Micro-organism in Infective Disease (Bradshaw Lecture).

THURSDAY.—5 P.M., Dr. G. F. Still: The History of Pædiatrics in the Seventeenth and Eighteenth Centuries (First Fitzpatrick Lecture).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Nov. 4th.—5 P.M., Mr. C. P. Wakeley: Specimens of Cysts.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 4th, to SATURDAY, Nov. 9th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Lecture by Mr. W. B. Gabriel: Common Rectal Complaints. No fee.—Tues., 8.30 P.M., Dr. J. W. McNee: Structure and Functions of the Spleen in Relation to Its Diseases. Fri., 8.30 P.M., Dr. O. L. V. de Wesselow: Nephritis and Œdema. Two lectures especially suitable for M.R.C.P. Candidates.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Wed., 10 A.M., Dr. Cecil Bull: Demonstration of Gastric Diagnosis. No fee.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. Wed., 2 P.M., Mr. W. Ibbotson: Demonstration of Throat Operations. No fee.—CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C. Special Post-graduate course in Ophthalmology. Every afternoon for four weeks, demonstrations and lectures.—ROYAL WATERLOO HOSPITAL,

Waterloo-road, S.E. Special post-graduate course in Medicine, Surgery, and Gynæcology. Every afternoon and some mornings for three weeks.—LONDON LOCK HOSPITAL, Dean-street, W. Post-graduate course in Venereal Disease. Daily every afternoon and evening. Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 4th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Wards.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw, Medical Out-patients. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. Dr. Scott Pinchin: Medical Out-patients.
THURSDAY.—11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.
SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.
Daily, 10 A.M. to 5 P.M., Medical, Surgical and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.
WEDNESDAY, Nov. 6th.—4 P.M., Mr. V. Zachary Cope: Radium Therapy.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 4th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 4th.—12 noon, Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Mr. Leslie Paton: Affections of the Optic Nerves.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Tumours of the Cerebral Hemispheres.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Ocular Palsies.
FRIDAY.—12 noon, Dr. Purdon Martin: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Infectious Diseases of Nervous System.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road.
FRIDAY, Nov. 8th.—4 P.M., Mr. A. Lowndes Yates: Diagnosis and Treatment of the Common Forms of Deafness.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Nov. 5th.—3.15 P.M., Mr. L. E. Barrington-Ward: Visceroptosis.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 6th.—4.30 P.M., Mr. Kenneth Walker: The Enlarged Prostate.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.
WEDNESDAY, Nov. 6th.—4.15 P.M., Clinical Meeting and Demonstration of Cases in the Wards. Open to all practitioners.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.
WEDNESDAY, Nov. 6th.—2.30 P.M., at B.M.A. House, Tavistock-square, W.C. Quarterly Meeting. Dr. T. Saxty Good: Some Experiments with Suggestion and Association Tests in the Feebleminded. Dr. Geoffrey Shera: Bacillus Acidophilus Deficiency in Mental Patients.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Nov. 5th.—5 P.M., Dr. H. MacCormac: Diseases Due to Animal Parasites.
THURSDAY.—5 P.M., Dr. W. J. O'Donovan: Occupational Dermatitis.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Nov. 6th.—3.30 P.M., Dr. J. B. Alexander: Modern Diet: Its Effect on the Digestion.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 6th.—4 P.M., Mr. Stanford Cade: The Possibilities and Limitation of Radium Treatment.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.
MONDAY, Nov. 4th.—5 P.M., Prof. Leonard Hill: Atmospheric Pollution.

KING'S COLLEGE FOR HOUSEHOLD AND SOCIAL SCIENCE, Campden Hill-road, W.
FRIDAY, Nov. 8th.—5 P.M., Prof. V. H. Mottram: Human Nutrition. (Fourth of six lectures.)

KING'S COLLEGE, Strand, W.C.
TUESDAY, Nov. 5th.—5 P.M., Mr. J. W. Pickering, D.Sc. Blood Plasma and Platelets. (Last lecture.)
THURSDAY.—5 P.M., Mr. J. A. Hewitt, D.Sc.: Metabolism of the Carbohydrates and Fats. (Last lecture.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.
THURSDAY, Nov. 7th.—9 P.M., Dr. Edward Mapother: Prognosis in Mental Disorder.

PEOPLE'S LEAGUE OF HEALTH, 12, Stratford-place, W.
FRIDAY, Nov. 8th.—6 P.M., Dr. Eric Pritchard: Preventable Disease.

LONDON HOSPITAL MEDICAL COLLEGE, Mile End, E.
FRIDAY, Nov. 8th.—4.30 P.M., Dr. Arthur F. Hurst: Precursors of Carcinoma of the Stomach. (Schorstein Memorial Lecture.)

UNIVERSITY COLLEGE, Gower-street, W.C.
MONDAY, Nov. 4th.—5 P.M., Dr. R. J. Brocklehurst: Secretion of the Digestive Juices. (Last lecture.)
THURSDAY.—5.30 P.M., Rt. Hon. the Viscount Grey of Fallodon: Natural History, the Pleasure and Purpose of Observation. (Rickman Godlee Public Lecture.)
FRIDAY.—5.30 P.M., Mr. C. S. Elton: The Future of Animal Ecology. (Last lecture.)

ANCOATS HOSPITAL, Mill-street, Manchester.
THURSDAY, Nov. 7th.—4.15 P.M., Prof. J. B. S. Stopford: Spinal Tumours.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 5th.—4.15 P.M., Dr. A. H. Holmes: Meningitis.
FRIDAY.—4.15 P.M., Dr. H. Herd: Behaviour Disorders of Childhood.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC
FRIDAY, Nov. 8th.—3.30 P.M., Dr. Naish: Gastro-Intestinal Disorders in Infancy and Childhood.

Appointments.

GOUGH, A., M.B., Ch.M. Leeds, F.R.C.S. Eng., has been appointed Hon. Surgeon, Hospital for Women, Leeds.
MCCURRY, A. L., M.D., B.Ch. Belf., D.O.M.S., Assistant Honorary Ophthalmic Surgeon to the Leicester Royal Infirmary.
MACINTOSH, J. M., Ch.B., M.D. Glasg., Assistant Medical Officer of Health, Northamptonshire.
Certifying Surgeons under the Factory and Workshop Acts:
VAISEY, G. N., L.R.C.P. Lond., M.R.C.S. (Freshford, Somerset), and CONFORD, G. J., M.D. Oxf., B.Ch. Lond. (Felixstowe).

Vacancies.

For further information refer to the advertisement columns.

Bedford County Hospital.—H.S. Also Asst. H.S. At rate of £175 and £130 respectively.
Birmingham City.—Asst. M.O. £750.
Birmingham, Highbury Hospital.—Res. M.O. £350–£400.
Birmingham, Queen's Hospital.—Res. Anæsthetist. £70–£100. Also Jun. R.S.O. £100.
Blackburn and East Lancashire Royal Infirmary.—Fourth H.S. £130.
Blackheath and Charlton Hospital.—Vacancies on Hon. Med. Staff.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200. Also Clin. Asst. to Ear, Nose and Throat Dept. £100.
Bolton, Townleys Hospital, Farnworth.—Second Asst. M.O. £225.
Bootle Borough Hospital.—Hon. Surgeon. Also Jun. H.S. At rate of £125.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Brighton, Royal Sussex County Hospital.—Sen. Asst. Path. £350.
Brighton, New Sussex Hospital for Women and Children, Windlesham-road.—Radiologist. £100. Also H.P. and H.S. Each at rate of £50.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Asst. S.
Chester Royal Infirmary.—H.S. £120.
Colchester, Essex County Hospital.—Asst. H.S. and Registrar. £120.
Coventry and Warwickshire Hospital.—Res. H.P. £160.
Derby County Borough.—M.O.H. £1100.
Dewsbury County Borough.—M.O.H. and School M.O. £900.
Douglas, Isle of Man, Noble's Hospital.—Res. H.S. £175.
Durham County Council.—Asst. Welfare M.O. £600.
East Ham County Borough.—Deputy M.O.H., &c. £700.
Elizabeth Garrett Anderson Hospital, Euston-road.—H.P. Obst. Asst. Three H.S.'s. Each at rate of £50. Also Clin. Assts.
Gloucester, Gloucestershire Royal Infirmary.—Second H.S. At rate of £100.
Gravesend and North Kent Hospital.—Jun. H.S. At rate of £80.
Great Yarmouth General Hospital.—Jun. H.S. £125.
Hampstead General and North West London Hospital, Haverstock Hill, N.W.—Cas. M.O. and Cas. Surg. O. Each at rate of £100.
Hertford County Hospital.—H.P. At rate of £150.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. At rate of £250.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.

Hove, Lady Chichester Hospital.—H.P. At rate of £100.
Isleworth, West Middlesex Hospital.—Asst. to Med. Supt. £250.
Inverness, Northern Infirmary.—Hon. Radiologist.
Italian Hospital, Queen-square, W.C.—Res. M.O. At rate of £150.
Jersey General Hospital, &c.—Res. M.O. £200.
L.C.C. Mental Hospital Service.—Eighth Asst. M.O. £300.
Leamington Spa, Warneford General Hospital.—Res. H.S. £165.
Leeds General Infirmary.—M.O. in charge of Radium Dept. £600.
Leeds Hospital for Women.—Hon. Asst. S.
Leicester Royal Infirmary.—Third Res. Anæsthetist. At rate of £250.
London County Council.—Res. Deputy Med. Supt. at The Manor, Epsom. £500.
London Jewish Hospital, Stepney Green, E.—Hon. Asst. Radiologist.
Manchester City.—Asst. Tuber. O. £650.
Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Res. M.O. £200.
Manchester, Salford Royal Hospital.—H.P. £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
North Middlesex Hospital, Silver-street, Edmonton, N.—Res. M.O. £200.
Nottingham General Hospital.—Second Cas. O. At rate of £150.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Med. Reg.
Public Dispensary, 122, Drury-lane, W.C.—Res. M.O. £150.
Queen's Hospital for Children, Hackney-road, E.—Cas. O. £100. Surgeon to Ear, Nose and Throat Dept. Also H.S. At rate of £100.
Radium Institute, Riding House-street, W.—Assistant to Medical Department. £600.
Rochester, St. Bartholomew's Hospital.—Res. Surg. O. At rate of £225.
Royal Northern Hospital, Holloway, N.—Med. Reg. £100. Also H.S. At rate of £70.
Royal Society, Burlington House, W.—Foulerton Research Student. £700.
St. John's Hospital, Lewisham, S.E.—Physician to Children's Dept.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—Clin. Assts.
Sheffield, Children's Hospital.—H.P. Also Third Res. M.O. Each £100.
Sheffield Royal Hospital.—Res. Anæsthetist. £80.
Sheffield Royal Infirmary.—Clin. Asst. to Ophth. Dept. Also Clin. Asst. to Med. Depts. Each £250.
Sheffield University, Faculty of Medicine.—Lecturer in Pathology. Also Demonstrator in Pathology. Each £500.
Smethwick County Borough.—Part-time M.O. for Infant Welfare. 1½ gns. per session.
Southampton County Borough Isolation Hospital.—Res. M.O. £360.
Southern Rhodesia Government.—Director of Public Health and Medical Services. £1750.
Walsall General Hospital.—Sen. H.S. Also H.S. At rate of £200 and £150 respectively.
Warrington Infirmary and Dispensary.—Jun. H.S. £175.
West London Hospital, Hammersmith, W.—Asst. Surgeon Dentist.
Willesden General Hospital, N.W.—Res. H.S. At rate of £100.
Windermere, Ethel Hedley Hospital for Crippled Children.—Res. H.S. At rate of £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Selby (Yorks).

Births, Marriages, and Deaths.

BIRTHS.

BROWN.—On Oct. 25th, at The Vine, Sevenoaks, the wife of W. G. Scott Brown, F.R.C.S., of a son.
DAVEY.—On Oct. 25th, at "Rockleigh," Gloucester, the wife of Dr. E. N. Davey, of a daughter.
MACKIE.—On Oct. 20th, at Louth, the wife of Col. F. P. Mackie, I.M.S., of a son.

MARRIAGES.

HILTON-SERGEANT—WALKER.—On Oct. 16th, at Dalton Church, Frederick Cavendish Hilton-Sergeant, Captain R.A.M.C., to Kathleen Margaret Howard, second daughter of Mr. and Mrs. Howard Walker, Dalton Grange, near Wigan.
SEXTON—ALLEN.—On Oct. 26th, at Ipsley, Frederic Braemar, Worth Sexton, L.D.S. R.C.S. Eng., of Plymouth, to Joan Florence, only daughter of Mr. and Mrs. Allen, of Beoley.

DEATHS.

BRAYE.—On Oct. 16th, at Hastings, Reginald James Braye, M.R.C.S., L.R.C.P. Lond., late of Leicester.
COOKE.—On Oct. 23rd, at Sawston Vicarage, Cambridge, Thomas Burnard Alfred Cooke, M.R.C.S., L.R.C.P.
DICKSON.—On Oct. 22nd, suddenly at "Hartree," Shanklin, Isle of Wight, Frank Lindsay Dickson, M.B., Ch.B., aged 56.
KENDREW.—On Oct. 23rd, in a nursing home, London, Alexander John Kendrew, M.C., M.B., White House, Mile End, Colchester.
ROWLANDS.—On Oct. 25th, at the Gables, Bromsgrove, Worcestershire, William Herbert Rowlands, M.R.C.S., L.R.C.P.
RUSSELL.—On Oct. 13th, at Holyhead, William Fox Russell, M.B., aged 65 years.
SMITH.—On Oct. 22nd, at Trevean, St. Austell, Cornwall, Ernest George Smith, M.R.C.S., L.R.C.P. Lond., late of Ford Park-road, Plymouth.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

ARTIFICIAL CREAM ACT PROSECUTION.

IN our issue of August 24th (p. 413) we noted the first prosecution under the Artificial Cream Act, 1929. Our summary of the evidence attributed to the defendant company (the Ferns Pure Milk and Cream Co.) the statement that a Government analysis showed that its cream was reconstituted cream with a low fat content. The company supplies us with independent analyses, showing the fat content of the preparation, and points out that its manager, in the evidence referred to, was referring not to the company's cream, but to that sold by certain dairy companies. We gladly publish the correction, and regret the occurrence of the error.

SEWAGE DISPOSAL.

IN his Chadwick lectures, delivered on Oct. 17th and 19th, Mr. A. J. Martin dealt broadly with the problems of sewage disposal. Concentration of population gives rise to many difficulties which do not occur in scattered communities, not the least of these being the disposal of excreta. To illustrate the rather reckless way in which our not very remote ancestors dealt with sewage, Mr. Martin quoted Sir Robert Rawlinson's question, "is it better to kill fish, or to kill men?" Methods of land disposal, appropriate enough when land was cheaper, had had their day, and chemical precipitation was a thing of the past. Sewage was by no means the dead and depressing thing that it looked, as it contained in itself the agents of its own purification. It was, however, necessary to give these organisms a chance of doing their work, to provide laboratories, and, in some cases, reagents for them. The modern bacteriological treatment of sewage had its beginnings in the coke-bed set up by the London County Council on the advice of Mr. Dibdin, and the septic tank first erected by Cameron at Exeter. The problem of sewage purification is too often complicated by the presence in sewage of large quantities of industrial wastes, among which the products of two new and growing industries, beet sugar and artificial silk, present special difficulties, which are not yet fully overcome. Many streams are badly polluted with these by-products, which are often discharged without appreciable treatment.

In his second lecture, which was largely historical, Mr. Martin stated that the purification of foul matter is most effectually achieved by oxidation; but whereas solid refuse is quickly burnt at a high temperature, the waste matters in sewage, diluted as they are with many thousand times their weight of water, can only be oxidised by the slow processes of moist combustion at ordinary temperature. In a small country like England, with no great lakes or rivers where this process can go on in very dilute solutions without artificial aid, special works and artificial means of introducing the necessary oxygen must be adopted. Even a vast country like the United States of America has sewage problems which are still outstanding. The ease with which a large proportion of the suspended solids of sewage can be removed by sedimentation points, said Mr. Martin, to this as an obvious preliminary measure before bacterial (or rather biological) treatment is used. Fifteen years ago it appeared that sedimentation tanks followed by treatment on trickling filters would be the standard form of disposal, but at that time Dr. Fowler threw a bombshell into the camp in the form of the activated sludge process. In this the usual course is reversed, and instead of the sewage passing over the active material, this latter, in the form of a flocculent humus-like suspension, is passed through the sewage. More was expected of the activated sludge process than has perhaps been realised, and where full purification is required it is usually advisable to provide filters. Nevertheless, by interposing activated sludge treatment, a city like Birmingham has been able to save the cost of laying down an additional acre filter-bed each year. London sewers laid 60 years ago are still doing good work, and for half a century the Thames has received the whole of the liquid sewage; but the volume discharged is now outgrowing the capacity of the river to deal with it, and the London County Council are about to lay down supplementary works of a novel character. What to do with the sludge produced by sedimentation is not easy to decide. In some places it is dealt with by digestion, and latterly successful attempts have been made to utilise the large volumes of combustible gas evolved. At Essen, Dr. Imhoff sells the gas so produced to the municipality, and Mr. Martin remarked, for the benefit of Sir G. W. Humphreys, who was

in the chair, that the northern outfall for London sewage was adjacent to the Becton gas-works. He closed with a note of warning about the waste of nitrogen involved in most of the present means of sewage disposal.

MATERNAL MORTALITY AND PUBLIC OPINION.

Mr. Arthur Greenwood, speaking at a Conference arranged by the Maternal Mortality Committee, and held at the Central Hall, Westminster, on Oct. 22nd, mentioned two of the good things which, as Minister of Health, he had inherited from his predecessor. These were the committee appointed to make a scientific investigation into the problem of maternal mortality, still at work, and the departmental committee on the training and employment of midwives, which had already reported. He also drew attention to the memorandum of the British Medical Association setting out a scheme for a national maternity service, and to the findings of the Royal Commission on National Health Insurance. Some of the recommendations of the committee on midwives could be set in motion under existing laws, but the major proposals of the report would require legislation. Many local authorities were not at present using a fraction of their powers in the matter of maternity service, and he was prepared to encourage, stimulate, and press them in every way to make effective the powers they already possessed. This, however, was largely a matter of public opinion; if 20 millions of people urged certain things with strength and determination, those things would be done. Mr. Greenwood said that he was no opponent of fresh legislation and, though it was difficult for him to give any pledge, he hoped it might be possible, at no distant date, to deal with the problem in a broad and comprehensive fashion, fitting it into the general provision being made to maintain and improve the standard of public health, and also into the provision being made through a system of social insurance.

This statement made it easy for Mrs. Hubback to introduce a resolution welcoming the recommendations of the departmental committee to make available for all mothers skilled attention and nursing before, during, and after childbirth, urging the Minister of Health to put the recommendations into force as soon as possible, and pledging the Conference to give him active support. It was evident, she said, that the Minister was going to merit his title, and all the public had to do was to back him up. Dr. H. B. Brackenbury, chairman of the Council of the British Medical Association, went further, saying that medical men had already shown themselves entirely in sympathy with the movement, of which they had, indeed, been pioneers. Public opinion was already ripe for action, and officials need have no hesitation in going ahead at once with a scheme such as that outlined by the British Medical Association. If Mr. Greenwood had introduced a measure on this subject as his first Bill, after taking office, there would have been no opposition. At the end of the meeting Mrs. Hubback's resolution was put to the Conference by Lady Cynthia Colville, the chairman, and was passed unanimously.

THE PATHOLOGIST ABROAD.

Dr. Austin Freeman[1] in this substantial volume brings together 37 examples of the uncanny detective ability of his now famous creation, Dr. Thorndyke. Seeing that Dr. Freeman has done medical service as house physician to the Middlesex Hospital, as a colonial surgeon, and as a surveyor and naturalist on political expeditions, he is able to conduct his readers from personal knowledge along very varied and curious pathological paths; and as all this assortment of wisdom resides, filed and indexed, in Thorndyke's brain, it becomes *natural* that he should regularly arrest the course of crime by the discovery of clues, the bare existence of which could never have been anticipated by the actor—"natural" is the right word, for Dr. Freeman, with great skill and accuracy, contrives always to account satisfactorily for episodes that are incredible. That is the main reason for his well-deserved popularity as a writer of detective fiction, and it is because he is so well documented that he has been able to create interest in what he terms the inverted story. Such a story opens with a narration of what has happened, so that the pleasure of the reader is not due to any excitement as to who did the crime or as to how it was done; these things we are told, but the fun depends on the intellectual exercise spent upon estimating the methods employed in detection. Obviously such a machinery for telling a story could only be employed by a writer who felt perfectly sure that each step in tracking down was taken upon sure ground.

Many will have seen some or all of these stories before, but no one without Thorndyke's powers of memory can have kept such an assortment of episodes in their head. We commend the book, as a diversion, to all our readers.

[1] Dr. Thorndyke, His Famous Cases. By R. Austin Freeman. London: Hodder and Stoughton. 1929. Pp. 1088. 7*s.* 6*d.*

MUSSEL POISONING.

A MYSTERIOUS poisoning has been found to result from the eating of mussels on the western American coast, particularly in districts north of San Francisco. Investigators have satisfied themselves that the poison is not formed by bacteria and that it is heat stabile in acid solutions. No means have been discovered yet of distinguishing wholesome from poisonous mussels. It is thought that the poison results from some metabolic disorder of this shellfish influenced by its food, and perhaps by the spawning conditions. It may be necessary to determine a closed season for mussels, in this region at least. In the meantime warnings have been issued by the California State Department of Health as to the danger of using mussels for food. Those who, soon after eating mussels, experience tingling or numbness around the lips and a prickly sensation in the finger tips or toes, are advised to call a physician at once.

THE CALL OF THE HIGH-VELD.

UNDER this title Dr. L. E. Hertslet has written a useful little pamphlet for "South African Railways and Harbours," which can be obtained from any office of Messrs. Cook and Son, and from the offices of the Union of South Africa, Trafalgar-square, W.C. The author gives a brief summary of the climatic and physical features of the country together with health statistics, an account of the facilities for recreation, and many notes which will be helpful to those who contemplate visiting "a land where the summer nights are cool and the winter days filled with sunlight, where it is not too wet and seldom too dry, where the barometer 'plays no tricks,' where the health-rates are good, where the altitude is not troublesome, and the atmosphere delightfully clear."

MECHANICAL MAN.

Mr. H. Stafford Hatfield, the author of Automaton, or the Future of the Mechanical Man,[1] gives instances of automatic processes either already invented or capable of being brought into existence and draws gloomy conclusions from their contemplation. He suggests that as these devices come into being life will become dreary and monotonous, ignoring the fact that the more complicated and skilled machinery and processes become the more skilled are the men needed to tend them. He argues from analogy that modern civilisation, largely based on such automata, must fall away just as it has risen. Analogy, however, here seems false, since the human race has been steadily, but with increasing velocity, developing its command over its environment for some half million years. We can afford to disregard the possible decline of a wave of progress which is still rising after so prolonged a period.

SNAKE-BITES.

A LITTLE book,[2] by Mr. F. W. Fitzsimmons, Director of the Port Elizabeth Museum, Cape Town, supplies in accessible form an account of the right ways of treating snake-bite. The mortality, permanent physical and mental disability arising from snake-venom poisoning in South Africa is known to be comparatively heavy, though no statistics are kept of the number of cases of snake-bite. Both the expert and the tyro in snake-lore will find matter to interest them in this book, and the section dealing with the prevention of snake-bite is of especial interest. Medical officers and adventurous members of the lay public will also acquire much accurate information upon snakes and their unwelcome habits.

[1] London: Kegan Paul, Trench, Trübner and Co. Pp. 100. 2*s.* 6*d.*

[2] Snakes—and the Treatment of Snake-bite. The Speciality Press of S. Africa, Ltd. 1929. Pp. 70.

A REMARKABLE HOSPITAL BAZAAR.—A five days' bazaar in aid of the new infirmary at Dewsbury has produced £22,153.

HOSPITALS AND MOTOR ACCIDENTS.—Members of Parliament who are interested in hospital questions and regional secretaries of the Association are being circularised by the Council of the British Hospitals Association with reference to the expense caused to hospitals by the treatment of sufferers from motor accidents. The Council say they have agreed to press for some recognition of the claims of the voluntary hospitals in this regard. Earl Russell, who is about to introduce a Bill dealing with road traffic, has informed Sir Arthur Stanley that the advisability of including in the measure some form of compulsory insurance for motorists is under consideration. Last year the treatment of patients injured in motor accidents cost three Glasgow hospitals over £10,000.

Bradshaw Lecture

ON THE

VIRULENCE OF THE MICRO-ORGANISM IN INFECTIVE DISEASE.

Delivered before the Royal College of Physicians of London on Nov. 5th, 1929,

BY J. A. ARKWRIGHT, M.D. CAMB., F.R.S.,

FELLOW AND COUNCILLOR OF THE COLLEGE; ASSISTANT BACTERIOLOGIST AT THE LISTER INSTITUTE.

THE problem of virulence has been and still is among the most arresting and fundamental subjects in the study of infective disease. Like that of the Origin of Sin, which has proved a difficult knot to loose even by the combined efforts of theologians and psychologists, and the Mystery of Pain, which was dealt with in so illuminating a manner by James Hinton, a distinguished Member of the sister College, the nature of virulence in infective disease has been the subject of much speculative discourse. In the case of virulence this phase of speculation has now given way to one of fruitful experimental investigation.

Since the doctrine of *contagia viva* has been firmly established the epithet "virulent" has been transferred from the disease to the living causal parasite by a lively metaphor which envisages a venomous germ attacking the innocent animal body.

Twenty years ago it was pointed out to me by the Director of the Lister Institute that the decline in cultures of bacteria from a state of high virulence and their occasional return to malignant activity, especially during sojourn in the animal body, was still a most baffling phenomenon, and one which often presented formidable obstacles to experimental workers and frustrated therapeutic investigations; consequently that it was worthy of deliberate study, though the elucidation might be long delayed. At that time the elusiveness of virulence in cultures of *Bacillus pestis* was a constant source of difficulty in preparing and testing plague vaccine and the obstacle has not yet been entirely overcome. The reason of the behaviour of attenuated cultures of *B. anthracis*, such as were used by Pasteur for anthrax vaccination, was and still is an unsolved problem, and the matter has not yet been specially examined by more recent methods. During the last 15 or 20 years, however, a certain amount of light has been thrown on the subject from various sides.

The experimental bacteriologist is apt to seek virulent cultures and to express pleasure when he obtains them. This craving might well be the sport of the uninitiated, since superficially it suggests the practices of a professional poisoner or the infatuated action of desperate combatants in modern warfare, as dreamt of by overwrought and ill-instructed military hygienists. Let us hope, however, that these things are but the food on which nightmares are nourished.

It may be well to recall shortly the reasons for the study of virulence in disease-producing parasites.

(1) In the first place it has been the belief of clinical observers and some epidemiologists that unusual virulence of the *materies morbi* is the reason of the greater severity and higher mortality of one outbreak of infectious disease than of another. It has, however, on the other hand, been suggested that these differences are due rather to changes in the population attacked, induced by temporary causes such as climatic, or dietary changes or by more subtle factors, which bring about a greater or less resistance of the animal subject. These contingencies are very hard to determine or estimate even by the skilful collection and treatment of statistics. In the hope of understanding these occurrences and of guarding against the more severe outbreaks, it is obviously important to know to what extent the living parasitic agent which excites the disease can itself vary, and to find out whether this change can be controlled. Again (2) the experimental pathologist often desires to have at hand a uniformly and sometimes an excessively active causal micro-organism in order to produce at will some disease in animals, for the study of all its features and especially so as to be able to test various remedial or preventive measures. For these purposes it may be necessary to make observations on a series of animals inoculated with uniform doses of the infective agent. (3) Knowledge and control of virulence are particularly important when actual cultures of the pathogenic agent, alive or dead, are used for prophylactic purposes. Moreover, in certain instances one culture or sample of pathogenic material will produce a mild attack which protects against the more severe, as in vaccinia, rabies, fowl-pox, and anthrax. For such purposes cultures or "inocula" of both weak and strong virulence but containing microbes otherwise the same are needed for experiment. Also (4), the use of dead bacteria as prophylactic "vaccines" has introduced the question whether it is needful that the cultures should have had all the properties of pathogenicity when they were alive, or whether virulence and toxicity are mere excrescences which may cause undesirable symptoms, even when the cultures used are dead, but that these qualities are not essential in order to stimulate the apparatus of defence. In the case of the allied procedure for producing antitoxin it is, of course, now well known that certain toxins, such as diphtheria toxin, can be changed into toxoids, or anatoxin, which has no obvious poisonous action but yet can be used to produce antitoxin in the bodies of man and animals. But the desirability of using virulent bacterial cultures for vaccines has been comparatively little studied.

For all these reasons the study and control of virulence are of prime importance.

(5) Allied to changes in virulence, but probably not due to exactly the same factors, are the changes in pathogenic bacteria, protozoa, and viruses which so adapt them to the animal host that they cause disease in one species but not in another. One may adduce many modern instances which appear in the recent work on pasteurellosis or hæmorrhagic septicæmia of animals, vaccinia, distemper, foot-and-mouth disease, herpes, &c. It is obvious, therefore, that variation in virulence is no idle study.

It is, then, of the *variability* of bacteria as regards their virulence and their capacity for harmful action on the bodies of animals that I wish to treat.

THE MEANING OF VIRULENCE.

Virulence in the general sense is the property by which a pathogenic micro-organism causes death or reaction of the part or parts of the body invaded and so leads to disease. Infective disease may be defined as the resultant or sum of the action of the infecting agent and the reaction of the body.

It has sometimes been objected that it is idle to speak of the virulence of a bacterium, since this quality depends on the interaction of the micro-organism and the animal which it infects and on the conditions which it finds in its host. The reason given for this opinion is in itself very true, but since the great variability of strains or races of pathogenic bacteria is now well recognised it has become clear that differences in the characters of different cultures of the same microbe may be such as to render it highly active or almost inert in respect of disease production, when introduced into the body even of a highly susceptible animal. A more just criticism is that the term virulence, as often used, includes a number of different qualities. The different forms of pathogenic action no doubt often combine to produce the result so that it is difficult to say which is most active in a given case. Since, however, I wish to deal chiefly with a particular part of the subject, I must make an attempt to analyse the property of pathogenicity and show how the different qualities affect

infection and what concerns their development in bacteria.

Infection and Pathogenicity.

When the bacteria obtain intimate contact with the animal body several different results may follow. I will mention three. (1) The bacteria may kill the animal or parts of the tissues by means of exotoxins, or of endotoxins without seriously invading the host. (2) The bacteria may have active properties which stimulate reaction and the host kills them out because they cannot resist the destructive powers of the body fluids and cells. (3) Virulent bacteria may invade by a more special method. The animal tissues react to their presence by producing effusions of liquids and cells which are unable to harm the bacteria and indeed afford a favourable pabulum for the invaders. Not only so, but as we shall see later there is reason to believe that the tissue juices of the normal susceptible animal may actually promote variation of the bacteria in the direction of increased virulence.

The reaction of the host is apt to be regarded as purposive and protective in effect, and no doubt this teleological language is almost unavoidable. Considered in detail, however, without preconceptions, the reaction appears in many cases merely as an inevitable result of the presence of the invaders and their products, almost comparable to the osmotic outflow of water when a dressing of strong salt solution or glycerin is applied to a wound or ulcer. On either view the protective result of such reaction is not necessarily successful.

True virulence or invasive power perhaps means that the invading microbe is so constituted that the first reaction of the host is favourable to its infecting progress, and this may be the chief difference between a virulent and a non-virulent organism. Effusions of liquid which are unable to kill often appear to an unprejudiced observer actually to help the bacteria. Even leucocytes may not be disadvantageous if they take up but cannot kill and digest the microbes. They may then help them to spread by transporting them to other parts of the body. They may even form suitable sites for the multiplication of the bacteria, as appears to happen in gonorrhœa and cerebro-spinal meningitis when the polymorphonuclear leucocytes certainly do not soon kill all the bacteria they engulf.

This hypothesis is difficult to prove, but in some cases there seems to be nothing but hypothesis opposed to it. In pneumonia the effusion of lymph certainly seems to be a good culture medium for the pneumococcus, and there is reason to think that in foot-and-mouth disease the amount of virus present is in direct proportion to the serous effusion, for if the foot of a guinea-pig inoculated with foot-and-mouth virus is protected from the pressure of the weight of the body the formation of vesicles may be avoided, and at the same time, apparently in consequence, the local production of virus is comparatively small, as has been shown by Mrs. M. C. Maitland. An instance of the same kind of thing is suggested by common clinical experience of streptococcal and staphylococcal infections. If an inflamed part, such as the hand or forearm, with a so-called poisoned wound is used or is allowed to hang down, the cellulitis is made worse, and with the greater effusion of lymph the infection is also enhanced. It is true that by Bier's treatment local infections may be cured, but this passive effusion of serous fluids is not quite the same thing, and their composition is perhaps not quite like that which the virulent invader provokes. Perhaps one might say that the exudate produced by constriction or suction is not of that kind which the pathogenic streptococci have learnt in the course of their evolution to use for their own ends, or it may be that Bier's exudate only deals with bacteria of low virulence.

This theory requires more experimental support, but it is difficult to believe that such a process involving assistance from the host takes no part in the invasion of virulent as opposed to the destruction of non-virulent bacteria. The alternative view is that the hostile products of the animal body exercise a stringent selection and promote the survival of the fittest microbes, which then proceed to invade the tissues. The chief difference in the former hypothesis is that the highly virulent culture is supposed already to possess these resistant and invasive properties, so that at the time of entry it is capable of making use of the attempted defence of the body and turning it to its own advantage.

For the purposes of this lecture I mean by virulence the power to invade and multiply in the tissues of the host without considering too closely the method of attack, but excluding pure toxic action.

Recent Observations which have Influenced our Views regarding Virulence.

It so happens that of late light has been thrown from different sides on the subject. The scattered threads of irregular observations have been drawn nearer together, and signs of more orderly connexion are now appearing. This leads to a hope that a reasonable means of control of virulence is in process of being formulated. The advance of knowledge has proceeded from different sides, and there are three distinct roads which converge to the attack on the problem.

(1) *Epidemiological Experiments.*—The original and illuminating work of Topley and Greenwood on experimental epidemiology, which has been expounded by Prof. Topley in the Goulstonian (1919) and Milroy (1926) Lectures before this College, has shown the dependence of the progress of an epidemic on the addition to the community of new susceptible subjects which feed the flame like fuel thrown on to the fire. This process has been demonstrated to depend on a deep-rooted reality, and not to be a mere figure of speech. These well-founded conclusions, and the data on which they rest, strongly suggest an increase in the virulence of the infective agent in the course of the epidemic as the result of its entering and infecting a series of new hosts.

This is not a new idea, but direct observation of the infecting bacteria isolated at different stages of an epidemic has not so far brought much confirmation. Examination of culture isolated at the height of an epidemic has not shown them to have greater virulence than those isolated at a milder stage, whether early or late. The failure may quite possibly be due to the great difficulty of determining the virulence of cultures with any exactitude and to other experimental hindrances. The occurrence of an advance in virulence with the progress of an epidemic is a probable but unproved hypothesis. In the more intimate field of experimental bacteriology, however, it is well known that "passage" through a susceptible animal of a bacterium which had been kept in artificial culture would often greatly enhance its activity and pathogenicity—e.g., streptococcus, *Vibrio choleræ* for guinea-pigs, and *B. anthracis*, the plague bacillus, &c. Still it has been doubted whether a state of deterioration like that found in artificial culture is really a factor determining the course of "natural" disease.

Topley, Greenwood, Wilson, and Newbold in 1928 were able to show that strains of *B. aertrycke* of low virulence were still able to produce epidemics in mice of a mild character, and those of higher virulence more severe and fatal epidemics, showing that virulence as determined artificially by inoculation had an influence on the course of disease acquired naturally and on its epidemiology.

(2) *Chemical Composition of Bacteria.*—Another main line of advance has been in the field of biochemistry, especially by the chemical analysis of bacteria and the discovery of components which condition active virulence or pathogenicity. This work has been carried on of late years, especially in America by Landsteiner, Heidelberger, and others, and H. W. Dudley amongst workers in this country has added to knowledge in this department. This chemical inquiry is a subject which I have no competence to discuss in detail, but the definiteness of the results obtained encourage workers along more old-fashioned bacteriological lines to believe that their own concordant results also represent real additions to knowledge.

The application of chemical researches to bacterial variation will be pointed out later. The two branches of investigation have helped each other, and, as will be seen later, much of the older chemical work was less fruitful than it might have been because bacteria were regarded too much as a whole, without appreciating that they might consist of separate parts of diverse function and composition. In consequence, the variation of these parts when it occurred was taken to mean a change in a single chemical substance, instead of independent variations quantitative and qualitative in the separate parts or "organs" of the bacillus. It is now known that both these kinds of changes occur, but the speculations of former days did not give a correct interpretation of the facts.

(3) *Bacterial Variation.*—The lines along which more strictly defined bacteriology is progressing are those which I chiefly desire to emphasise. They are based on the evidence of variability of bacteria, especially as regards virulence amongst other characters which has received much attention of late years. Finished results must not be expected at present. Suggestive facts and a few experimental hints are all that can be boasted of as yet, but they are of great promise.

There are two main aspects of variation in virulence, and it is necessary to consider them separately. The first is the evidence of their different behaviour in the animal body, and the second is the evidence of variation in the morphology of the bacteria and their colonies and in their chemical composition and properties in vitro.

Varied Behaviour of Organisms in the Body.

Variation in toxigenicity.—In artificial cultures the same strain of a bacillus may vary very much from time to time in the concentration of toxin which it will yield, a fact which is the bugbear of those whose duty it is to obtain a "good" toxin for the production of antitoxin. Non-toxigenic variants of the diphtheria bacillus have been isolated from strains of high repute as toxin makers by several workers, Baerthlein, Maitland, and Crowell, though other good observers have repeatedly failed to do so.

Variation in invasive power.—Virulence in the stricter sense means ability to invade the tissues of the host and multiply there. In many cases the laboratory in-vitro tests of virulence have been made by techniques which show the readiness with which the bacteria will undergo bacteriolysis or be taken up by phagocytes or behave in the complement-fixation reactions when under the influence of specific immune serum containing antibodies. These experiments are really concerned with the question whether the particular serum fits the bacteria—i.e., contains antibodies to the special antigens in the particular cultures used. They do not indicate their capacity for infecting susceptible animals. The most desirable tests of virulence are those which show the effect of the serum and tissues of the normal susceptible animal on the bacterial strain rather than the effect of the serum of an immune animal. In practice it is the susceptible animal which is the measure of virulence and not one which is immune. At present the direct test of pathogenicity and lethal effect of inoculated cultures is the best method of estimating virulence, but this is open to many special difficulties and fallacies, and it is partly on this account that the more easily recognisable characters of cultures in vitro which are correlated with virulence are of special value.

Variations in virulence shown by animal experiment.—The virulence of different cultures of the same strain of the same kind of micro-organism may vary enormously as shown by animal experiment. The pneumococcus and streptococcus are well known instances of this. Griffith obtained two variants of a single strain of pneumococcus with very wide differences in virulence. Dr. G. F. Gaskell in a former Bradshaw lecture described the pathology of pneumonia in rabbits which had been produced by the inoculation of cultures of different virulence. He found the variation in virulence such that the minimum lethal dose for a mouse varied between 1·0 c.cm. and one ten-millionth of 1·0 c.cm. of an 18 hours' broth culture. Eagles examined four different variants of a single strain of streptococcus and found that their lethal doses varied from 10 million to 100 cocci. G. S. Wilson injected mice with virulent and non-virulent cultures of *B. aertrycke* and found that whereas the former killed 2 mice out of 20, the virulent variant killed 18 or 19 out of 20 in one-twentieth of the dose, a difference of 1 to 180. Comparable differences may be found in *B. pestis*, *B. anthracis*, and the filtrable viruses.

Since variation in virulence of cultures is an accepted fact, several questions at once arise. What is its exact nature—i.e., what is the intimate change in the bacteria composing the cultures? How can these changes be encouraged or prevented? What other changes accompany changes in virulence? How are the changes observed to appear?

Pfeiffer in 1903 discussed the known facts and regarded the loss of virulence as of the same kind as atrophy of function from disuse, and its recovery as due to renewed opportunity for action aided by survival of the fittest—i.e., of the most virulent bacteria—in the animal body. A view essentially similar to this is perhaps the most acceptable to-day. At that time, 26 years ago, however, much ingenuity was expended in trying to fit in the facts with complicated views about haptophore and toxophore or ergophore chemical groups in the bacteria. These views dealt with substances too hypothetical to allow of profitable argument or sound conclusions and subsequent verification. Such conceptions still have their value, especially in relation to exotoxins, but seem to have led the protagonists astray. Pfeiffer and Hamburger believed that it was the antibacterial action of the amboceptors in the serum of normal animals which accelerated or brought about the change and that consequently culture in the serum or the bodies of immune animals would be still more effective in promoting virulence. Walker and Shaw attached more importance to the destructive action of the complement or alexin in this capacity. It is probable that neither as such has much influence and certainly the evidence points to the so-called amboceptor having an exactly opposite effect.

Kinds of Variation.

Variation in bacteria as in other living things may concern large or small changes, in single or in groups of characters. Such characters are motility, serological properties, manner of growth in culture, agglutinability by salt, &c., in addition to changes in virulence.

It has been considered an important question from the point of view of the geneticist whether the changes are all due to loss or may also be due to acquirement of a character. It is often hard or impossible to say which is which, for an apparent gain may be due to the loss of some inhibitory factor and vice versa. If the acquiring of the power to ferment a sugar or if the gain of a capsule and of virulence or the adaptation to a new species of host is a true gain, as these changes appear to be, then gains certainly occur as well as losses. It has been argued that the apparent acquisition of a new character is really due to the survival of the few individuals which have had this character all the time, or even to the hypertrophy of a dormant character and not to a really new acquisition. But it is not clear why such latent properties in a culture should be postulated if they cannot be observed. It seems probable that a character first appears in a few individuals, and that then its relative increase is encouraged by selection, and often the same factor in the environment which produces the first variants also favours their selection. This is very strongly indicated when a species of bacterium acquires the property of fermenting a sugar on which it did not act on in the first place. The presence of the sugar conditions the appearance of a few bacteria capable of effecting the fermentation, and these are then encouraged and selected because

they have the advantage of a new pabulum which is denied to the others. In the same way, and perhaps for the same reasons, there is a likelihood that adaptation to animal tissues and juices is produced by the presence of these tissues or their chemical constituents which first produce a new quality in the bacteria and then afford an additional nutriment to the new race which increases in consequence.

The bogy of inheritance of acquired characteristics, moreover, need have no terrors for the bacteriologist, since bacteria are not known to have differentiated reproductive organs nor to undergo conjugation or a sexual phase, though such life-histories have been described. Consequently the theoretical readjustment with reversion to type at these stages need not be taken into account. There seems to be no sound theoretical objection to hereditary variation of bacteria being influenced by direct environmental influence followed by environmental selection. Such variations have been described in the kind of variants called "clones" in protozoa which persist for long periods of repeated asexual multiplication but are believed usually to come to an end when conjugation has occurred. Such automatic intensifying action on variation by the environment which both causes variation and then selects the variant seems especially indicated in certain bacterial variations—e.g., (1) the fermentation of a new sugar, (2) adaptation of a species of bacterium to a new host, (3) increase of virulence during passage through a susceptible animal, (4) diminution of virulence during passage through immune serum, (5) the change from a non-virulent uncapsulated pneumococcus into a capsulated virulent variant, which has been described by Griffith as the result of passage through a mouse together with a dead emulsion of capsulated pneumococci.

Variations which can be Detected in Cultures.

Variants of very diverse characters can be obtained by selection of colonies on agar culture medium. Almost every known character has been observed to vary in one species of bacterium or another. By persistent selection of colonies growing on agar plates made from old broth cultures or from cultures in special media a persistent or hereditary variant can be obtained corresponding to each of these altered characters. Some of the best marked hereditary variants that can be detected in cultures must be described.

Variants are said to be hereditary when they can be kept pure by subculturing on agar at fairly short intervals without the need for fresh selection of isolated colonies. Four very distinct kinds of variants are now well known in the group of intestinal bacteria which includes *B. coli*, *B. typhosus*, and *B. paratyphosus*. Many other hereditary variants are also recognised, but these four have been shown to have a definite position as regards virulence. The four variants are as follows.

(1) The so-called normal strain recently isolated from the body. This is typically motile and makes a turbid growth in culture bouillon, and on nutrient agar forms round, dome-shaped colonies with smooth shining surface and a regular margin. This is called the smooth motile form or shortly the S.M. form.

(2) Colonies on agar of such a strain can often be found which are similar in appearance but contain only non-motile bacteria; these may be indicated as S.N.M. This variant has been called the O form by Weil and Felix because the growth in the case of *B. proteus* is different from that of the motile form. The latter makes a confluent filmy growth all over the surface of agar and consequently Weil and Felix called it the H form because of the "Hauch" or film characteristic of it. The non-motile form they described as "ohne Hauch" or "O."

(3) The next variant is also motile like the S.M. or normal, but instead of growing in smooth round shiny colonies with even edges the colonies are more or less irregular in outline, rough and uneven or dull on the surface, and of a granular and often opaque texture and a jagged outline. This has been called the Rough or R form to distinguish it from the S. Since it is motile it is also named R.M.

(4) The fourth form or R.N.M. is non-motile, like the second, but is rough like the third.

Mixed and intermediate variants occur, but these four forms can often be obtained pure with some little trouble by repeatedly selecting colonies; they will then often keep constant if transplanted at intervals of a week for very many subcultures, each of which represents hundreds of thousands of divisions or bacterial generations.

Virulence and capsule.—Perhaps the most important variants for my present purpose besides those described above are the capsulated and non-capsulated forms of pneumococcus and of the pneumobacillus of Friedländer whose colonies can be recognised on solid media. These will be again referred to later.

The four forms of variants of *B. typhosus*, &c., depend on two pairs of characters for their differentiation, motility, and absence of motility, "smoothness" and "roughness." The corresponding components are the flagella, which are responsible for motility, and the "smooth"(S) somatic antigen or the "rough" (R) somatic antigen, which constitute smoothness or roughness.

Want of Connexion between Virulence and Motility: Presence of Flagella.

As far as the evidence goes at present "motility" has no relation to virulence nor to toxigenicity. That is to say, a motile S and a non-motile S culture are both of approximately the same pathogenicity as far as is known, and the same is true of a rough motile and a rough non-motile, though in this case the pathogenicity is of a very low order.

Motility means the presence of flagella, and the presence of this constituent in emulsions of motile bacteria is shown by the manner of reaction with specific agglutinating serum. The flagellated bacteria agglutinate in large loose fluffy floccules and emulsions of the non-motile variant with agglutinating serum form small, dense granular clumps. It has, in fact, been shown that motile bacteria possess two kinds of agglutinable substances which condition the formation of clumps with specific sera, whilst the non-motile form has only one corresponding to the bodies of the bacteria which is consequently called the somatic substance as opposed to the flagellar substance. When an animal has been infected with or inoculated with motile bacteria two agglutinins appear in its serum which act on the flagella and the bodies respectively, but if a non-motile and completely unflagellated variant or species has been inoculated then the serum contains only agglutinins for the somatic antigen or agglutinable substance.

As has been pointed out above, it is the somatic substance which is most nearly related to virulence and the flagellar has not been shown to make much difference in this respect. It has also been shown that such reactions with serum in vitro as bacteriolysis, bactericidal action, and complement fixation are for the most part, if not quite entirely, concerned with the somatic part of the bacteria and are related to the nature of the somatic antigen, but they have very little indeed to do with the flagellar part. It has also been found in *some* experiments that in order to give an animal protection against a particular motile organism it is unnecessary to use a motile form or variant for the protective inoculation or vaccine. This is in harmony with what has just been said about most of the known in-vitro immunity reactions being all concerned with the somatic part of the bacteria.

The hypothesis that the elaborate flagellar apparatus of such bacteria as the typhoid or paratyphoid bacillus is of no importance as regards pathogenicity is at first sight rather startling, but it is borne out by certain other facts. It has been observed that motility varies with the temperature of incubation in some strains of *B. typhosus*, *B. paratyphosus* A, and other bacteria. For instance, all strains of *B. pseudotuberculosis rodentium*, a plague-like bacillus which

causes disease in guinea-pigs and rabbits and occasionally in man, are motile when the incubator is kept at 70° to 80° F., but when the cultures are kept at 95° to 98° F. they are no longer motile and often they do not form any flagella. This fact alone suggests that flagella do not play an important part in infection, since the body is never cool enough for them to develop readily in these strains, which may nevertheless be quite pathogenic.

Further, it is not very uncommon to obtain from the blood in typhoid fever only non-motile cultures. It is true that they usually become motile after being subcultured once or twice, but the motile character is evidently suppressed in the blood and tissues of these patients, and this assumption is made the more probable by finding that in some groups of cases the patient's serum when used for a Widal reaction fails to give the typical flocculent clumping of flagellar agglutination even when the emulsion used for the test is well endowed with flagella. This defect in the typical Widal reaction was found in 25 per cent. of the cases of typhoid examined by Felix in Palestine and in 75 per cent. of cases tested by Pijper in Johannesburg. Other workers in South Africa have had a similar experience. So frequently did Pijper find the Widal test fail that he ceased to attach much importance to it. It is now, however, realised, as the result of Felix's work, that the serum of such patients does still agglutinate the bodies of typhoid bacilli in a characteristic manner, though the serum contains no flagellar agglutinins. The somatic clumping is not so obvious and needs some hours incubation of the agglutination tubes before it is apparent. For this reason somatic agglutination has very often been missed and not taken into calculation in agglutination experiments.

Relation of the Somatic Antigen to Virulence.

Since the flagellar part of the bacteria appears to be of such little pathogenic importance it remains to consider the constituents of the bacterial bodies which can be detected and to some extent measured by serum reactions, especially by agglutination, which is probably a fair measure of the somatic antigens.

R. variant. Non-virulent.—In old laboratory cultures of *B. typhosus* and *B. dysenteriæ*, the specific smooth somatic agglutinable substance often becomes altered to that found in the R form so that it loses its specificity. These R bacteria then give less specific reactions and they agglutinate with sera made for the R form of other species of bacteria and have also lost their virulence. This "rough" change is promoted by growth in strong nutrient broth. In much more dilute broth—e.g., diluted with water four or five times—it keeps its S characteristics much longer. The replacement of S by R bacteria in old laboratory cultures in great part, if not altogether, accounts for their loss of virulence.

R variant produced by anti-"S" serum.—Not only are the R forms found in old laboratory cultures, but the S may be changed to the R antigen by more active means. If an S culture is grown in serum of an animal which has been immunised against the S form of the same bacillus, the S character gradually disappears from the culture and some, or all, of the bacteria become rough. At the same time the culture becomes non-virulent. This has been observed in part by several workers, Stryker, Walker, and others, and more definitely recently by Griffith, Reimann, Pitt, and myself. It is clear now that it is the actual antibody in the S anti-somatic serum which produces or accelerates this change, and that other antibodies do not have any effect. When the R somatic antigen has displaced the S, the S antiserum no longer has any somatic specific antibodies for such R bacteria. In spite of the lack of virulence of the R form it does not appear to lack vitality and vigour for vegetative growth.

Chemical Analysis.

It is in the attempt to solve the problem of the real difference between the S and R forms that the biochemist has stepped in and materially helped the concept of virulence.

Carbohydrate specific soluble substance.—The work of Heidelberger, Avery, Zinsser, and Landsteiner has introduced a new idea into the study of virulence. Their results are strongly supported on the theoretical side by Landsteiner's work on other kinds of substances which evoke antibodies in the blood of animals.

The virulent capsulated pneumococcus and the similar cultures of the capsulated so-called pneumobacillus of Friedländer when analysed chemically have been shown to contain a carbohydrate substance which is absent from the uncapsulated or "degraded" cultures which lack virulence. The capsule appears to consist largely of the carbohydrate or polysaccharide which has been called the "specific soluble substance," united with protein. It seems certain that this high development of the capsule is responsible for virulence and specificity and that the protein with which the carbohydrate is combined and which alone remains in the uncapsulated variety while sufficient for the life and growth of the microbe does not of itself determine high virulence. Not only is this the case, but the potent specific substances present in the blood of the immunised animal which counteract the effect of virulent cultures are not formed unless the carbohydrate or specific soluble substance is present in the immunising inoculum. This specific substance is not in itself, however, particularly toxic, nor does it evoke antibodies in the blood serum unless it is united with the protein substance which is always present, and which is apparently the most essential component of the bacterium as regards life and growth, apart from survival in the animal body and parasitism.

At first it looks as if the coincidence of capsule and virulence might be merely a restatement of the old observation that capsulated were more pathogenic than uncapsulated bacteria in certain species, and might be due to the old belief that the capsule protected the bacillus against phagocytosis by its physical interference with the process. There is, however, more in it than that, and there is a distinct advance in knowledge. Besides the satisfaction of having pushed the understanding of the matter back to the more intimate chemical structure, the capsule of different types of pneumococcus has been shown to be different chemically, and since the virulence of the types varies, so also the virulence may be said to vary with the chemical composition of the capsule. Type I. pneumococcus is much more virulent than type II., and the sugar obtained from it by analysis is different.

Moreover, there is very good reason to believe that a similar addition of a carbohydrate "specific soluble substance" to the protein of the bodies determines the difference in pathogenic activity and serological behaviour of the S and R variants of *B. typhosus* or *paratyphosus*, though in these bacteria there is no suggestion of a capsule being present.

Streptococci are a much more difficult problem, but they yield to chemical analysis essential differences in the composition of virulent and non-virulent cultures, and these have to some extent been correlated with the manner of growth, though in this group the superficial differences in the colonies are not quite the same, and still need further study before their significance is established. It seems as if the specific soluble carbohydrate substance comprised in the capsulated and S cultures was the essence of virulence and specificity which, as it were, gave a fillip to the bacteria and enabled them to cope with the conditions in the animal body.

A theoretical but not unimportant question is, how does the bacterium get this new substance? Is it merely due to a development and increase of an already existing part or function, or is it really an acquirement taken up whole and worked into its

organisation like food and perhaps derived direct from the susceptible animal, or does it arise by the reaction of the bacterium to the juices and cells of the host? Certain bacteria are well known to increase in virulence when grown in normal serum in vitro.

The idea of an actual acquirement by the microbe from outside seems crude at first sight, but seeing that the capsulated state of the pneumococcus is not as a rule permanent and is often rather fugitive on artificial media which do not contain animal products, such as serum, the persistence of the capsule for the limited number of generations during which it usually continues in artificial media might perhaps be due to purely passive inheritance. Griffith, in 1928, using what appear to have been ample controls, found that if a living uncapsulated non-virulent pneumococcus were injected subcutaneously into a mouse together with a large amount of an emulsion killed by heat of a virulent culture of capsulated pneumococcus, then the mouse might die with virulent capsulated pneumococci in the blood of the same type as that of the heated culture. Neufeld and Levinthal, in the latter part of the same year and Reimann more recently, have confirmed this observation in essential points. This suggests that the presence of the specific soluble substance from the heated capsules enabled the uncapsulated or degraded culture to acquire virulence for the mouse and capsulation by assimilating the material from its environment. This is a remarkable feat and if fully corroborated will mean a great advance in the theoretical position. It is *not* intended to maintain that no parasitism can occur without these or somewhat similar changes in the capsular or somatic composition, but in the case of the more virulent microbes which have been investigated this appears to be so.

Immunity and prophylaxis in relation to variants.—In a few instances in which experiments have been made and a definite answer obtained, not only does virulence appear to be dependent on chemical changes or on the presence of special chemical constituents, but also the production of specific antibodies and immunity by inoculation of the bacteria, whether dead or alive, appears to depend on the same factor. Vaccines which do not contain bacteria endowed with the specific soluble substance are neither actively pathogenic nor of much value for prophylaxis.

Correspondence of in-vivo and in-vitro Characters.

The thesis which I wish to support, therefore, is that there is often a correspondence in variants between in-vivo and in-vitro characters, and that capacity for parasitism can in certain cases be detected by examining the saprophytic characters. A virulent has often essential differences from a non-virulent which are recognisable apart from the animal body, and these differences are of a definite kind.

To take a concrete example, the *B. aertrycke* or *B. enteritidis* of food poisoning has so-called forms named in bacteriological jargon "smooth" and "rough" variants. These are distinguished usually in the following way: (1) By the R being agglutinable by salt solution and forming a deposit in broth culture with clear liquid above, whilst the S is not agglutinated by weak salt and in the broth culture is uniformly turbid. (2) By the smooth, shiny, round colonies of the S and the irregular, flattened, granular colonies of the R form. (3) By the production of different antibodies in animals by the two forms and their differential reactions with them. These serum reactions appear at present to be the most constant and serviceable in-vitro tests of the difference. (4) By chemical differences, on which the previous characters and especially the last appear to depend. This is probably the most fundamental character which has been discovered. (5) By the loss or gain of virulence. (6) There may be loss or gain of toxigenicity associated with the change in virulence, or toxigenicity may appear to be quite independent. (7) Associated with the last four characters, ability or inability to produce specific resistance in animals with dead vaccine, has certainly been demonstrated in some cases, and this property may be retained by the emulsions used as vaccines even after boiling or treatment with alcohol. (8) A further change or state associated to some extent with the foregoing is very prominent sometimes. Adaptation to a particular species of animal cannot be recognised in vitro, but as far as observation goes the R form is not capable of adaptation. In other words, a virulent adapted strain is always S.

It is fair, then, to claim that the study of virulence and all that it implies has made a definite step in advance in the last ten years by the convergence of pure bacteriology, epidemiology, and chemistry on the problem, and many new directions for future advance have been indicated and paths for investigation have been opened up.

THE USE OF A NEW QUINOLINE DERIVATIVE IN THE TREATMENT OF INFECTION.*

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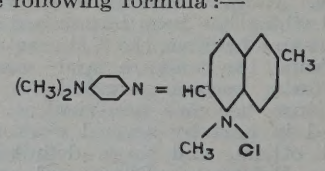
In a paper[1] published by Browning, Cohen, Ellingworth, and Gulbransen, in 1926, a number of derivatives of anil-quinoline were shown to possess strong antiseptic properties.

They represent a new group of compounds, not hitherto used as antiseptics. These substances are crystalline solids which display a characteristic green reflex, and form in water blue and violet solutions. Since, however, the substance is used in very high dilution, the stains of its solutions on linen are easily removed by ordinary washing processes. Owing to the instability of these compounds towards hydrochloric and other strong acids, they are unsuitable for administration by the mouth, unless special provision is made for protecting them in their passage through the stomach.

The member of the group selected for these experiments was No. 48 of the series described in the paper and has the following formula:—



2 (*p*-Dimethylamino anil) 6 methyl quinoline methochloride.

It may be mentioned that two other substances (Nos. 52 and 59 of the series) were first selected for preliminary tests, but their almost complete insolubility in normal saline was a serious drawback.

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[1] Proc. Roy. Soc., B., 1926, c., 293.

Although slightly less powerful in antiseptic action than these compounds, No. 48 is much more soluble in normal saline. With the object of further increasing the solubility of the substance, an attempt was made to prepare a sulphonated derivative. This product, subsequently referred to as "48 S," [2] although not the desired sulphonated compound, nevertheless proved on comparison with 48 to be superior in antiseptic power and to possess lower toxicity. The nature of the difference between 48 and 48 S is not at present known.

Antiseptic Tests.

Various amounts of a 0·02 per cent. (1 in 5000) solution of 48 S in normal saline were added to tubes of 1 per cent. peptone water and 20 per cent. serum-peptone water to give a series of concentrations from 1 in 50,000 to 1 in 1,000,000. These were inoculated with a loopful from a light emulsion of *Staphylococcus aureus* and *B. coli*. The tubes were incubated for 18 hours and subcultured on to agar plates. From the results of a number of tests the following figures represent a fair average for the minimum concentrations which effected complete sterilisation.

Anil-quinoline 48 S.

1 per cent. peptone water.		20 per cent. serum-peptone water.	
S. aureus.	*B. coli.*	*S. aureus.*	*B. coli.*
1/500,000	1/350,000	1/400,000	1/300,000

For comparison, simultaneous tests were made with acriflavine, which is a recognised efficient antiseptic in common use.

Acriflavine.

1 per cent. peptone water.		20 per cent. serum-peptone water.	
S. aureus.	*B. coli.*	*S. aureus.*	*B. coli.*
1/200,000	1/100,000	1/200,000	1/100,000

It will be seen from the above figures for 48 S that the potency is only slightly diminished by the addition of serum, in agreement with the observations previously recorded by Browning and his co-workers with respect to this group of substances.

With regard to the figures for acriflavine, although too great weight need not be attached to the differences in the values obtained (compare Browning and Gulbransen,[3] 1921), the comparison indicates that 48 S is more potent than acriflavine, and encouraged us to proceed with clinical tests.

Toxicity Tests.

The toxicity of 48 S was tested on rabbits by intravenous injection of a 0·5 per cent. (1 in 200) solution in normal saline, this forming an exacting test of the toxic action of the substance. Consideration of an extensive series of tests (75 rabbits) showed the mean dose tolerated by a 4½ lb. rabbit to be in the neighbourhood of 9 c.cm., equivalent in drug content to 45 c.cm. of the strongest solution later used intravenously in clinical practice. It will be seen, therefore, from the figures quoted later, that the clinical administration of the substance was far within the probable limit of tolerance for man.

Clinical Tests.

In view of the comparatively high antiseptic power and the relatively low toxicity of 48 S, it was decided, with the sanction of Prof. Dobson and the members of the honorary staff of the General Infirmary at Leeds, to test this compound in the treatment of all varieties of both local and general infective conditions. Its use at the above hospital has been extensive during the past 18 months.

Whilst it is impossible to give a detailed report of the in-patients (exceeding 1000 in number) treated with 48 S, or of a considerably larger number of out-patients, an attempt will be made to classify the cases treated according to the method of usage of the antiseptic, to state results, and to give a comparative impression of the value of 48 S. In certain sections, typical and instructive cases will be quoted.

It must be remembered how exceedingly difficult it is to assess the value of an antiseptic. There is no satisfactory bacteriological test; we have tried the method of taking swabs, growing cultures at intervals, and counting the number of colonies per unit field; but there are many fallacies and drawbacks in this method. Practically speaking, the only method is to judge the antiseptic on the clinical results obtained, and to compare the results with those obtained when using other antiseptics. Principally we have relied on this method. It has been advantageous, because the expenditure of a long period of time has been necessary, which is essential if a thorough clinical test of any antiseptic is to be made.

Groups of Cases in which 48 S has been Used.

A. It has been used as a prophylactic *antiseptic dressing* or *pack* in the treatment of: (1) Potentially infected accidental wounds and abrasions, as met with in the casualty department. (2) Extensive laceration of soft tissues, either alone or associated with fracture, requiring a thorough toilet of the wounds under general anæsthesia. (3) Circumcisions, amputation stumps, skin grafts. (4) The post-rectal space after operation for prolapse or excision of the rectum or after interstitial irradiation of cancer of the rectum with radium.

B. As a *local application* and *pack* in the treatment of gross infections: (1) Acute infections of the skin and subcutaneous tissues—i.e., boils, carbuncles, and cellulitis. (2) Suppurative hæmatomata. (3) Acute suppurative bursitis. (4) Acute suppurative lymphadenitis. (5) Ischiorectal and perianal abscesses. (6) Infected abdominal wall wounds—e.g., after operation for acute perforated appendicitis. (7) Fungating growths.

C. As an *irrigant* in the treatment of acute infections of bones and joints, such as acute infective osteomyelitis and acute suppurative arthritis.

D. As an *irrigant* in the treatment of chronic long-standing infections, comprising chronic infective osteomyelitis of the lower jaw, chronic empyemata, and suppurating hydatid cyst of the liver, after marsupialisation.

E. As a *genito-urinary irrigant* in cases of: (1) Acute and chronic cystitis. (2) Suprapubic bladder washing after cystotomy for enlarged prostate, vesical calculus, ruptured bladder and urethra, or malignant papilloma of bladder treated by diathermy. (3) Wheelhouse and Symes's external urethrotomy. (4) Perineal section for extravasation of urine. (5) Nephrostomy for pyonephrosis.

F. *Intravenous administration* in cases of septicæmia with a positive blood culture.

Clinical Results.

The following is a brief résumé of the clinical results obtained in each of the above groups.

Group A.—The strength of solutions used varied from 0·05 per cent. to 0·1 per cent. (1 in 2000 to 1 in 1000) in normal saline solution. As a modification we have tested the antiseptic in hypertonic saline—i.e., 2–3 per cent.—but this possesses no obvious advantage over normal saline. We are of opinion that the results obtained in this class of case are satisfactory. They are particularly striking in the case of the extensively lacerated wounds which are so common as a result of machinery or motor accidents. Cases of severe mutilation of the limbs associated with bad comminuted fractures have given excellent results.

[2] It is suggested that this substance should be called "quinanil."

[3] Brit. Jour. Exp. Path., 1921, ii., 95.

The antiseptic is a bland, non-irritant one, and can be used in abundance without any tissue damage or irritation. Its use can be prolonged; the granulation tissue which forms is firm, not swollen or œdematous, of the healthiest colour, and not protuberant.

Group B.—Here again the results have been satisfactory. In such cases as deep abscess cavities—e.g., ischiorectal—where it has been essential to pack the cavity most carefully and over a long period of time in order to ensure healing from the depth of the wound, there has been no indication of tissue damage or irritation. Epithelialisation from the edges of the wound is encouraged.

Group C.—In the case of acute infections of bones and joints, 48 S has received a thorough clinical test. The strength of solution used has varied, depending upon age and type of infection, from 0·01 per cent. to 0·1 per cent. (1 in 10,000 to 1 in 1000) in normal saline solution. The method of application has been by intermittent flushing of the wound, always keeping it moist by the aid of Carrel tubes. It is our opinion that in these cases the infection is more quickly brought under control, the separation of the sequestrum occurs more readily, and consequently the healing process is more rapid than has been our experience with other antiseptics generally employed in the treatment of these conditions. In uncomplicated cases, within 14 days of the original gutter operation for the drainage of the medullary cavity of the bone, the wound presents a firm, reddish pink, healthy granulating surface extending into the depths of the bone, and interrupted only by the yellow edges of the sequestrum in the process of separation.

One case of acute suppurative arthritis of the hip-joint is worthy of mention:—

The patient, aged 16 years, was admitted under the care of Mr. Dobson, complaining of excruciating pain in the left hip-joint of six weeks' standing. She was profoundly ill on admission, with temperature 103° F., respirations 28, and pulse 120. Examination revealed the fact that there was an acute suppurative arthritis, together with pathological dislocation of the left hip-joint. Exploratory arthrotomy was performed by one of us (G. A.). The head of the bone was excised and the joint drained. Continuous irrigation with 0·1 per cent. (1 in 1000) 48 S in normal saline solution was carried out. Immediately after operation the patient was profoundly ill, but apparently suffered no toxic effects from the large amounts of 48 S used.

To-day, ten months after her discharge from hospital, the wound is perfectly healed, and walking is almost devoid of limp. Examination of the joint reveals complete bony ankylosis in a position of 30° flexion and 30° abduction. X ray examination confirms the clinical findings.

Group D.—In this type of subacute and chronic infections the results are quite naturally not so striking as in the former classes, but nevertheless these cases have done well. The same strengths of solution in normal saline have been employed. In some cases 48 S has been used solely; in others its use has followed upon previous treatment with other antiseptics.

Group E.—As a genito-urinary antiseptic much weaker concentrations have been employed—namely, 0·005 per cent. to 0·05 per cent. (1 in 20,000 to 1 in 2000) in normal saline. The results have been encouraging. It should be remembered that the antiseptic is precipitated by concentration of salts such as are met with in normal urine, and in order to avoid this preliminary washing out with normal saline and boric lotion is carried out. Cases of bad cystitis in association with gonorrhœal and traumatic strictures of the urethra, enlargement of the prostate, and malignant papilloma of the bladder have responded satisfactorily.

A man, aged 58, was admitted to hospital under the care of Mr. Dobson, suffering from an extensive malignant papilloma of the bladder, associated with a stinking cystitis. Mr. Dobson performed a suprapubic cystotomy and found it impossible to proceed further on account of the cystitis. Suprapubic irrigation of the bladder with 0·05 per cent. (1 in 2000) 48 S in normal saline reduced the degree of cystitis in a remarkable manner within ten days.

Another man, aged 36, was admitted to hospital under the care of Mr. Dobson, suffering from rupture of the urethra in association with a fractured pelvis. Operation was immediately performed by one of us (G. A.). Perineal section was performed, but it was impossible to repair the tear in the urethra without preliminary suprapubic cystotomy and retrograde catheterisation. Eventually repair of the urethra was accomplished, and all the wounds left open. Irrigation of the bladder with 0·05 per cent. (1 in 2000) 48 S in normal saline was carried out during the patient's stay in hospital of ten weeks. To-day, eight months after operation, the patient is perfectly well, with no trace of cystitis.

Group F.—The nine cases of septicæmia treated by intravenous injection are as follows:—

(1) Six cases of acute infective endocarditis. No successes have been obtained. All the cases treated had a positive blood culture (streptococcus) and were all well advanced when they came under treatment. The initial intravenous dose was 20 c.cm. of 0·1 per cent. (1 in 1000) 48 S in normal saline solution, and this was repeated daily, increasing by 5 c.cm. on alternate days up to as much as 50 c.cm. Although all the cases proved fatal, it is significant to note that the temperature dropped after energetic administration of 48 S, and no toxic effects were manifested.

(2) One case of pneumococcal septicæmia and one case of staphylococcal septicæmia with bronchopneumonia. Both these cases terminated fatally.

(3) One case of streptococcal septicæmia with a positive blood culture, which recovered. This patient was under the care of Dr. J. le F. C. Burrow, to whom we are indebted for permission to publish the case.

The patient, a male aged 20, commenced his illness suddenly with a rigor. He continued for more than a week with severe backache and pains in the legs, high temperature, and shivering attacks. On admission to the hospital he was extremely ill, pulse 130, respirations 24, temperature 102°, pale, sweating, and semi-delirious. He made much complaint of pain in the legs, and especially in the region of the right hip, such that an acute arthritis of this joint was suspected. There were enlarged and tender inguinal glands, and an examination of the foot revealed a septic heel. A blood culture taken on the day of admission revealed the presence of a hæmolytic streptococcus.

It was decided to institute a vigorous course of intravenous antiseptic treatment, using a 0·1 per cent. (1 in 1000) solution of 48 S in normal saline. 20 c.cm. were administered at once, and on succeeding days for three days, when the dose was increased to 30 c.cm. and given for six days. Thus in ten days the patient received 260 c.cm. During this period the temperature was remitting daily between 103·5° and 100°. It then continued to intermit, gradually falling, however. On the tenth day after admission the temperature was normal, with an evening rise to 99·5°. Intravenous treatment was then stopped. Meanwhile the heel was incised, and a quantity of pus obtained. A large abscess of the right buttock appeared, and was drained on the tenth day after admission. A blood culture taken the next day was sterile. The patient's general condition was greatly improved, and the pulse was normal. His convalescence was uninterrupted for a fortnight, when he had a 48-hour pyrexial bout due to nasopharyngeal infection. A third blood culture taken immediately after this was also sterile. He was discharged after a short convalescence cured, and remains perfectly well to-day nine months afterwards.

Whilst we cannot attach great importance to the value of one particular case, we deem the above worthy of record.

Summary.

"48 S" is a slight modification of an antiseptic previously described by Browning and co-workers. The action of this antiseptic is only slightly diminished by the presence of serum, and the substance has a relatively high antiseptic titre, together with a low toxicity. The above clinical results indicate that 48 S is an antiseptic which is valuable in the treatment of all classes of surgical infections.

Addendum by Prof. Dobson.

Nothing is more difficult than to estimate the value of an antiseptic either in the prevention or in the treatment of septic processes. So far no scientific method has established itself as of value in such estimation, and one is left to depend entirely on personal opinion. Too often such opinions are valueless, being the outpourings of undiscerning

enthusiasts. No surgeon who can recollect during the war the recurring waves of enthusiasm which greeted the advent of the latest antiseptic from "strong mixture" to plain soap can remain other than sceptical about another new remedy. But the search still continues for an antiseptic which, when applied in time, will prevent the development of sepsis and, when this process is established, will control and subjugate it. It cannot be maintained that this substance, 48 S, is such an antiseptic. Yet in my opinion it possesses qualities superior to those of any other similar substance of which I have experience. It is worthy of an extended trial, which I hope it will receive.

THE VALUE OF BISMUTH IN THE TREATMENT OF SYPHILIS.

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Before bismuth was definitely introduced for the treatment of syphilis in 1920 by the French workers, Levaditi and Sazerac, organised research had already been undertaken in Germany with a view to the use of this substance in the treatment of spirillas and related infections. These investigations, however, did not lead far because of the high toxicity of the preparations or compounds. As early as 1908 Uhlenhuth in the Imperial Hygienic Institutes treated trypanosome infestations with bismuth combined with arsenic. With the same end in view Ehrlich and Karrer in 1913 made a preparation of bismuth and arsenobenzol which unfortunately proved very unstable and therefore could not be used in practice. Not until 1919 did German writers publish a communication dealing with investigations on bismuth; in that year Kolle and Ritz used intravenous injections of colloidal bismuth in the treatment of syphilis in rabbits. This substance, however, proved extremely toxic and the investigations were therefore discontinued.

The studies of bismuth, begun in 1916 by Sauton and continued by Levaditi and Sazerac, who published their results in 1920, were first investigated in Germany in 1922 by Hugo Müller, who used the original French preparations. In the same year the first German antisyphilitic bismuth preparation was produced in Hamburg by the chemical firm of Tosse. This was "Bismogenol," and it was at once introduced into therapeutics by Deselaers. Other preparations of bismuth followed and were extensively investigated from the clinical side, and a large number were found to be active. A recent review by Hugo Müller and Kohlenberger shows that there are now about 17 German preparations of bismuth for the treatment of syphilis. Erich Hoffmann is justified in describing this state of affairs as harmful.

After six years of clinical observation and therapeutic administration we give our general conclusions on the value of bismuth treatment. There can be no doubt that the introduction of this metal represents a definite step forward in the treatment of syphilis, and the views of the few observers who contest this point (de Stefani, Villarejo, Bonnamour-Delore) do not essentially alter our opinion. Hugo Müller, to whom we owe an excellent summary on the technique of bismuth treatment, justly remarks that the various authorities who have made comparative studies of the therapeutic value of bismuth, salvarsan, and mercury have started from different standpoints. Some laid more stress on the rapid disappearance of the spirochætes when there were manifest symptoms and bismuth was the only treatment employed. Others attached more importance to the change in the reaction of the serum, or to the clinical progress, or to the rapidity of the disappearance of the obvious symptoms. Further, it must be remembered that different investigators used different preparations of bismuth of very varied composition, a fact which will certainly account for differences in the final verdicts. Lomholt states that different bismuth compounds are absorbed at very varying rates. This author has made an excellent contribution to the question of the chemical action and the fate of bismuth in the body, and in his most recent summary (1928) remarks upon the defective knowledge and erroneous ideas which exist on this subject. As the rate of absorption varies it follows that the effect must vary. "The decisive factor for the potency of action is the amount of bismuth metal which they contain and the rapidity with which they are taken up from the site of their deposit and pass into the body." The amount of bismuth varies extraordinarily—according to Langer as much as 20–100 per cent.—in the different preparations and also varies in different batches of the same preparation (Grumach, Engelhardt). The rapidity of absorption depends considerably on the method of application, on the solvent or suspension medium, and on the concentration and the size of the particles.

There is an extensive literature on the pharmacological, toxicological, and chemotherapeutic aspects of bismuth, especially in the treatment of syphilis, and it would lead too far to go into the details here. Engelhardt has recently published for the first time the results of researches, with methods to which no objection could be taken, on the excretion of bismuth from the human organism, with special reference to the significance of the various preparations and various methods of their use in the treatment of syphilis. This work calls for special attention.

Intramuscular Injection of Bismuth.

At the present time the method most generally adopted in Germany is the intramuscular injection of insoluble salts. Intravenous injection (Nadisan solubile, Nadisan colloidale, Sigmuth, Salluen, Wismulen, Bismuto-Yatren, Solvitren, &c.) has been practically abandoned, despite certain good reports (Memmesheimer, de Medina), primarily because of the great danger of shock and acute yellow atrophy of the liver, but also because the effect is in some respects weaker—e.g., on the serum reaction (Müller and Kohlenberger, Pautrier and Benech). In October, 1926, Hugo Müller sent a circular letter to German institutions where bismuth preparations were most in use, and he reports that over one-half of all the clinics employ the first German bismuth preparation—i.e., Bismogenol. We have used this preparation in our own clinic for the last six years, although we have also employed others. Our conclusions on its value for antisyphilitic treatment are based upon a relatively large number of clinical cases kept under observation for a comparatively long time.

Bismogenol is a suspension of a bismuth compound of a highly valent oxybenzoic acid in olive oil; it is thus a salicylate derivative, possibly identical with bismuth salicylate. Its content of bismuth is 59–60 per cent. or 0·05–0·06 g. per c.cm. Engelhardt has discussed the absorption of the preparation and has shown that Bismogenol is "the one bismuth preparation which is absorbed with the rapidity required." He further observed as a remarkable fact that Bismogenol is followed by a diuretic action which is not noted to such an extent after other bismuth preparations (a daily diuresis of 4–5 litres during the first ten days of treatment). There is a considerable literature on Bismogenol, including work by investigators from other countries as well as Germany. One great and indispensable therapeutic fact that emerges from all this work is that Bismogenol is, in the widest sense, an innocuous preparation. This is clearly shown by a case in this clinic which has been described by Prater.

A patient had two injections of 10 c.cm. of Bismogenol at an interval of three days, the usual dose being 1 c.cm. As a result of this enormous overdose the patient had a mild stomatitis and a slight trace of albumin appeared in the urine, but there were no local signs of irritation. Six weeks

after the two injections a skiagram failed to reveal any deposit of bismuth.

Bismogenol is not subject to bacterial contamination, even if the vessel containing it is exposed to the air, Deselaers and Kafka have shown that Bismogenol remains sterile under these conditions, and we have been able to confirm their observation.

Experiences with Bismogenol.

Two reports have been issued from this clinic at the conclusion of a large series of investigations on the therapeutic effect of this preparation. One of us (Ritter) described his experiences one year after the introduction of Bismogenol, when he stated that the method of treatment with it showed remarkably good progress. There was not one failure in six cases of primary syphilis with a negative Wassermann. The reaction remained negative after the healing of the clinical signs. In other words, this preparation acted as an abortive agent on the disease. The effect of the exclusive use of bismuth in secondary and tertiary syphilis was good, the effect on the serum reaction being particularly noteworthy. In a work which appeared two years later Lauterbach was able to confirm Ritter's observations on the basis of a much greater clinical material. He also had at his disposal a series of patients who were treated by Bismogenol exclusively with excellent results. It is noteworthy that one patient who was treated for secondary syphilis with bismuth subsequently acquired a reinfection. Lauterbach also mentions especially the good effect on the Wassermann reaction (W.R.).

After six years' experience with this preparation our opinion of it has undergone no modification. Unpleasant effects have hardly ever been encountered, especially not the "embolia cutis medicamentosa" (exanthematica, bullosa, gangrænosa) described by Freudenthal, Nicolau, and Nagel. Freudenthal, who described it first, designated it as a "local embolic Bismogenol-exanthem," but it has not been observed in the many thousands of injections undertaken during the course of a year. Other skin eruptions have been described by authors such as Buy, Wenniger, Grön, Müller, Hudelo, and Ravaut) after the administration of other bismuth preparations as well as after Bismogenol (Kerl), but we have not observed any of them. There is, however, one exception in a patient who is still in the clinic and whose case should be described on account of certain important points.

A female patient, aged 19 years, suffering from obvious syphilitic signs (papules, spirochæte-positive) had received an intramuscular injection before admission. The nature of the preparation could not be ascertained. Otherwise there had been no treatment. On admission the W.R. was strongly positive. An intramuscular injection of 1 c.cm. of Bismogenol was given. The next day the patient had a high temperature and a generalised dermatitis of a scarlatiniform type, of the characters with which we have been familiarised by Jähnke and Schäcker and Pawlas. Venesection was performed and Ringer's solution was infused, and in a few days the manifestations subsided, but the rash returned after eight days in a milder form, although the patient had no more Bismogenol. After this relapse had disappeared 1 c.cm. of Bismogenol was given again, whereupon the temperature rose once more and there was a repetition of the rash. There was a very strongly positive intramuscular reaction with 0·1 c.cm. of Bismogenol, and a pad soaked in Bismogenol could not be kept on the skin of the forearm for longer than ten minutes because of the intolerable burning and blistering. Thus there was in this case an intense hypersensitiveness to Bismogenol. The behaviour of the skin to other preparations of bismuth has not so far been tested. The patient tolerates salvarsan exceedingly well. After the subsidence of the second outbreak of the rash the W.R. was completely negative, and the syphilitic manifestations were completely cured.

This case provides one of the best proofs of Ritter's contention of the importance of toxic exanthemata as non-specific curative factors in syphilis.

By-effects were seldom seen. That most frequently observed was a bismuth line, more especially in patients who had the bismuth at the conclusion of a malarial treatment—in other words, patients who were particularly liable to absorb the drug in large amounts. The line, however, was invariably slight. A fully developed stomatitis was seen very rarely, but we always insist upon a very thorough hygiene of the mouth during an antisyphilitic treatment. We have never seen any disturbance of the intestinal tract nor any derangement of the nervous system, and damage to the kidneys was also very rare. In no case was there any permanent injury; at most some epithelial cells could be found in the urine, but without albumin. Naturally, the urine must be most carefully examined during a bismuth treatment. None of the patients ever complained of pain at the site of the injections, which were never objected to, even by the most sensitive patients.

The Relationship of Bismuth to Salvarsan and Mercury.

As with every new form there were at first some optimists who wished to place bismuth on a higher plane than salvarsan in the treatment of syphilis. Ritter uttered a warning against this in his first work, and the experience of the following year, based upon comparative researches, showed that he was correct. Lomholt laid great stress on the far-reaching pharmacological and toxicological similarity of bismuth and mercury. From a therapeutic standpoint both metals produce a rapid saturation of the body with a large amount of the metal which, however, is well borne. The saturation persists for a very considerable time, Owing to this similarity Lomholt is of opinion that bismuth may replace mercury in the treatment of syphilis, because the by-effects of the latter drug are much more severe, but that bismuth can never replace salvarsan. Hugo Müller, on the other hand, states that bismuth appears to be superior to mercury—apart from grey oil and calomel—but that otherwise it is not correct to speak of a complete substitution of mercury by bismuth. Bismuth cannot be regarded as irreplacable in the sense that salvarsan is, because the latter holds a unique position in the campaign against syphilis as a human plague.

Naturally, different views on this matter are more or less subjective and are not capable of proof. Our own opinion, based upon experience, is that bismuth is definitely superior to mercury. Since using bismuth in our clinic we have not once given an injection of mercury. The question of inunction treatment is, however, not under consideration here, and we are also of opinion that the substitution of bismuth for salvarsan does not come under discussion. Each of these drugs has its own definite indication which mainly follows the natural course of the disease. To a certain extent the two drugs coincide at a certain point, and then they should be given in combination, for one of the most important advances in the modern treatment of syphilis appears to be the realisation that each case must be treated individually and any scheme should only be adhered to loosely. In choosing the form of treatment we must reckon to a very great extent on the coöperation of the powers of immunity possessed by the body, and we must be most careful not to disturb the state of immunity which is the resultant of the play of infection and defence. Our opinion agrees with that of other authors (Buschke, Langer, Nonne) that bismuth is well adapted for this purpose.

It was mentioned above that, at first, cases of primary chancre with a sero-negative reaction were treated with Bismogenol in an abortive manner, and that as a matter of fact permanent cure was attained. This method was at that time applied exclusively for the purpose of testing the Bismogenol, but it should not be adopted in practice. In this type of case salvarsan is absolutely indicated and should be used in combination with bismuth as an abortive treatment. Salvarsan will remove the actual state of infectivity with the maximum rapidity; its sudden powerful action may prevent the infection of the entire body. By means of the bismuth a long persistent effect over a certain period is assured, and this acts as a prophylactic against relapses. The further the syphilis extends the stronger is the indication for bismuth in its treatment. Although some authorities advocate

abortive treatment by means of salvarsan alone, and some indeed assert that combination with other remedies weakens the effect of the salvarsan (Stühmer, Fantl), the great majority take their stand on the combined treatment of secondary syphilis. Gougerot goes even farther when he says "after the first year salvarsan treatment is no longer imperative." The longer the syphilis persists the less becomes the necessity for salvarsan and the greater the indication for bismuth. The whole tendency of the schemes of treatments inclines towards the latter, and in further combination treatment iodine takes the place of salvarsan. The only exception to this is in cases where the cerebro-spinal fluid is positive in the stage of late latency, when a combined malarial treatment should be undertaken. At the conclusion of the malarial course a further course, in the form of an abortive treatment, should be given.

The very great value of bismuth, especially for the treatment of the later stages of syphilis, is undoubtedly due to some extent to the fact that it is a mild and yet durable remedy which serves as a preparation for more intense courses of treatment. It is never followed by the severe reactions which are often seen in the later stages after salvarsan. Bismuth is never contra-indicated at the beginning of an antisyphilitic course, with the one exception of early abortive treatment, whereas there are many contra-indications to salvarsan in the later stages. On the other hand, bismuth is indispensable in those cases which are hypersensitive towards salvarsan or mercury.

A Scheme of Treatment.

In the course of years a definite scheme of treatment has been worked out; it is tabulated herewith. No attempt will be made to compare this scheme with the many others which have been published from different clinics, but one point should be emphasised in the words of Jadassohn, "it is certainly not desirable to adhere slavishly to a scheme, which is by no means unnecessary in syphilis . . . but every scheme affords the opportunity of individualising."

We have adopted the following as divisions of the different stages of syphilis.

1. *Incubation Period.*—Three to five weeks. Variations from six days to six weeks.
2. *Primary Syphilis.*—Stage of primary chancre.
3. *First to Second Stage of Syphilis.*—As primary stage; but there is a positive Wassermann reaction without any clinical signs of generalisation.
4. *Secondary Syphilis.*—Manifest clinical signs of generalisation; spirochætes present; Wassermann reaction positive. In rare cases both these signs may be negative. Duration of secondary period generally four years, chiefly depending upon the state of immunity.
5. *Tertiary Syphilis.*—Manifest clinical symptoms coming on after the secondary period with positive Wassermann reaction. The presence of spirochætes is exceptional, and their absence the rule.
6. *Latent Syphilis.*—A general term for stages wherein the syphilis only manifests itself by a positive serum reaction, but no definite clinical signs are present. Its subdivisions are: (*a*) Early latency: three to five years after infection. (*b*) Late latency: after three to five years subsequent to infection.

The fundamental condition of treatment must be accurate diagnosis—i.e., the demonstration of spirochætes or of a positive Wassermann reaction after the exclusion of other causes. Observation may in itself be treatment.

(A) *Incubation Period.*—Observation.

(B) *Primary Syphilis.*—Administration of large doses of salvarsan in three courses as soon as the diagnosis has been verified. First day: 0·45 g. neosalvarsan. Second day: 2 c.cm. Bismogenol. Third day, 0·45 g. neosalvarsan. Fourth day: 0·45 g. neosalvarsan. Fifth day: 2 c.cm. Bismogenol. Sixth day: 0·6 g. neosalvarsan. Seventh day: 2 c.cm. Bismogenol. Eighth day: 0·6 g. neosalvarsan.

This is to be followed every four or five days by 0·6 g. of neosalvarsan and 2 c.cm. of Bismogenol twice weekly.

Total amount of salvarsan	5–5·5 g.
„ „ Bismogenol	20 c.cm.

Twenty-four hours after the first injection a W.R. test must be done and repeated every eight days during the treatment and 14 days after its termination.

Second Course of Treatment (30 days later).—First day: 2 c.cm. Bismogenol. Second day: Interval. Third day: 2 c.cm. Bismogenol. Fourth day: 0·45 g. neosalvarsan.

Then two injections of 0·45 g. neosalvarsan in the week and two injections of 2 c.cm. Bismogenol. In the following week two injections of 0·6 g. of neosalvarsan and of Bismogenol. Total amount as in first course of treatment. W.R. test as in first course and then at the end of the treatment and subsequently every month.

Third Course of Treatment (90 days later, last course).—The scheme is as in previous course; the W.R. tests included. If the reaction is negative no further treatment is given. Observation for possible later internal manifestations.

First to Second Stage.—Treatment as in secondary syphilis.

(C) *Secondary Syphilis.*—The treatment must avoid the production of a severe Jarisch-Herxheimer reaction on the one hand and of inadequate treatment and waste of effort on the other.

First Course.—Same scheme as second course of primary syphilis, with Wassermann test at the end of the course. Potassium iodide should be given in the interval until the second course begins.

Second Course (30 days later).—Identical with the first course.

Third Course (90 days later).—Similar to the other courses.

If the reaction remains negative after the first course no further treatment is required after the third course; but monthly tests should be made at first, and later on quarterly and half yearly. The cerebro-spinal fluid should be examined after three to five years. If this is positive treatment should be given as for latent syphilis. If, on the other hand, there are variations in the reaction during the subsequent courses further treatment will be required until the Wassermann reaction remains negative, and then two more courses should be given subsequently.

(D) *Tertiary Syphilis.*—It may be accepted as a principle that the skin, by the production of tertiary syphilitic manifestations, indicates that it has attained a very intensive degree of allergic sensitiveness and that the case in question is especially characterised by a great esophylactic action.

(*a*) *Simple skin cases*, without complications in the heart, vessels, bones, and especially in the cerebro-spinal fluid, can be relieved by Bismogenol injections, oral administration of potassium iodide, Zuttman's solution, and general tonics. Careful observations of internal organs and central nervous system is necessary; if these are healthy prolonged iodide administration should be given after the disappearance of skin symptoms, but observation must be continued. The Wassermann reaction must under no circumstances be forced to become negative.

(*b*) *Skin Cases Combined with Diseases of Internal Organs.*—The principle should be that of individual treatment of each case with reference to age and general condition. Long treatment with potassium iodide, inunction, and bismuth should be tried before resorting to salvarsan, in order to avoid the dangers of the latter. In detail:—

(1) *Heart and Blood-vessels.*—In addition to Bismogenol and potassium iodide a subsequent course of neosalvarsan is given in small individual doses (0·15–0·3 g. per dose), until a total quantity of 5 g. has been given, according to the amount of toleration, and repeated as in secondary syphilis.

(2) *Kidneys.*—Bismogenol and mercury, potassium iodide, and neosalvarsan are given with general care.

(3) *Liver.*—Salvarsan, potassium iodide, Bismogenol, and dietetic treatment are given, together with general care.

(*c*) *Skin Cases Combined with Disease of the Cerebro-spinal Fluid.*—Combined malarial treatment (compare work of Ritter-Völker). Contra-indications: Simultaneous presence of a renal or hepatic disorder; this must be dealt with first and then malarial treatment instituted. Simple syphilitic meso-aortitis is no contra-indication to malarial treatment.

(E) *Latent Syphilis.*—The examination of the cerebro-spinal fluid plays an essential rôle, especially in establishing the existence of a late latency, and also in treatment. A series of investigations has shown that:—

(*a*) In the stage of early latency the results of examination of the cerebro-spinal fluid are very varying.

(*b*) The cerebro-spinal fluid may become normal spontaneously if it has already been pathological.

(*c*) Energetic treatment is capable of making the fluid normal.

(*d*) As a rule the state of the cerebro-spinal fluid apparently remains constant for two to three years after infection (Meirowsky).

In the following scheme of treatment the term "well treated" signifies a method of treatment which corresponds to our directions for primary or secondary syphilis. "Insufficiently treated" signifies cases which have not undergone the courses prescribed by

our scheme, or cases which have had inadequate dosage or where the intervals between the injections have been too long.

(1) *Early Latency.—Positive W.R.* (*a*) Well treated; repetition of treatment as for secondary syphilis. If there is no change, malarial treatment (relative indication as a result of resistant serum reaction).

(*b*) Insufficiently treated: treatment as for secondary syphilis; otherwise procedure as in (*a*), when the Wassermann reaction remains positive.

Negative W.R.—(*a*) Well treated; no further treatment, careful clinical observation, and eventually examination of cerebro-spinal fluid at onset of late latency.

(*b*) Insufficiently treated: consider whether diagnosis of syphilis was correct; no treatment; procedure as in (*a*).

(2) *Late Latency.*—For every further decision in these cases it is necessary to obtain the result of the examination of the cerebro-spinal fluid.

Positive W.R.—(*a*) Well treated:—

(1) Positive W.R. in cerebro-spinal fluid: combined malarial treatment.

(2) Negative W.R. in cerebro-spinal fluid: Salvarsan treatment contra-indicated. Generally mild treatment with Bismogenol and potassium iodide is advisable, with careful observation and subsequent repetition of the lumbar puncture. Combined malarial treatment is given when there is a relative indication owing to resistant Wassermann test.

(*b*) Insufficiently treated.

(1) Positive W.R. in cerebro-spinal fluid: combined malarial treatment.

(2) Negative W.R. in cerebro-spinal fluid: very careful observation; procedure as in (*a*), subsection (2).

Negative W.R.—(*a*) Well treated.

(1) Cerebro-spinal fluid positive: after the exclusion of any possible error in this test malarial treatment (for which this is a most precise indication).

(2) Cerebro-spinal fluid negative: no treatment; careful observation.

(*b*) Insufficiently treated.

(1) Cerebro-spinal fluid positive: malarial treatment (most precise indication).

(2) Cerebro-spinal fluid negative: consider whether the diagnosis of syphilis was correct; no treatment; careful observation.

(G) *Congenital Syphilis.*—Treatment should only be given when the diagnosis of an existing syphilis has been absolutely established.

(1) Mother obviously syphilitic during pregnancy: good prophylactic treatment; careful clinical and serological observation of child without treatment.

(2) Mother with latent syphilis: no treatment during pregnancy or first discovery of syphilis in mother towards end of pregnancy, and no treatment in a prophylactic sense.

(*a*) Child clinically healthy: serological examination to be repeated often; treatment as for secondary syphilis if Wassermann reaction is positive; salvarsan, inunction treatment, and later Bismogenol.

(*b*) Child evidently syphilitic: treatment as for secondary syphilis (neosalvarsan 5–10 mg. per kilo body-weight, thus beginning with 0·02, later 0·03 g.–0·05 g.; subsequently inunction treatment, 0·5 g. each dose in four parts, then bath, interval of two days, repetition; about 30 rubbings and duration not more than five minutes. The ointment should be made to penetrate rather than be merely rubbed over. As an introduction to the treatment in pemphigus give sublimate baths (1 g. of corrosive sublimate dissolved in 100 c.cm. of absolute alcohol; 20 litres of water to be added to this mixture, at 35° C.; duration of bath 30 minutes). If there is any mercurial dermatitis the drug must be given internally thus:—

℞ Hydrarg. iodat. flav.	0·01
Pulv. gummos	0·5

Sig: One to three powders daily.

Careful observation must be made of the stools. The decision regarding the quantity of the drug which is to be administered must be based entirely on the constitution of the infant. As a rule there should be three courses of treatment in the first year, two courses in the second year, and one course in the third year.

3. Late congenital syphilis: as a rule treatment should be as in tertiary syphilis. When clinical signs have disappeared an examination must be made of the cerebro-spinal fluid.

(*a*) Negative Wassermann reaction:

(1) Cerebro-spinal fluid negative: no treatment.

(2) Cerebro-spinal fluid positive: malarial treatment, definite indication.

(*b*) Positive W.R.

(1) Cerebro-spinal fluid positive: malarial treatment, very strong indication.

(2) Cerebro-spinal fluid negative: no treatment, clinical observation, indication for malarial treatment relative.

This scheme offers a mode of treatment which is free from danger; but treatment must always be entirely conditioned by the state of the patient.

ELECTRICAL TREATMENTS IN ACUTE CONDITIONS.

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FOR many years electrical currents have been employed only in convalescent, or chronic conditions, and little or no thought has been given to the possible benefits they might bring to patients suffering from acute illnesses such as pneumonia, peritonitis, septicæmia, collapse, or shock.

This is very natural in view of the history of the development of electrotherapeutics. One of the earliest forms of electrical treatment was the "static machine." In this treatment the patient was near a big, unwieldy apparatus on an insulated glass-legged table, and was frequently the recipient of sparks and purposeful small shocks. With such a setting the mind does not even associate anything sedative, much less a sick room. Then came the so-called "Faradic currents," with their stimulation of muscle contractions, and the far more painful "Galvanic" contractions. Ionisations had their day, and were frequently carried to the point of toleration by the patient; even ultra-violet light, with its stinging erythema, and diathermy with its ability to coagulate and burn, all helped to make electrical treatment a process that required somewhat of robustness on the part of the patient.

It is, therefore, not in the least surprising that the possibilities of electrical currents in acute illnesses should have failed to receive recognition or support from those who had experience of its earlier and more common uses.

Since ultra-violet light has become more and more familiar to practitioners the interest in physical means of treatment has grown, and with this growth has come a realisation that, with suitable technique, this current can be so employed that it either can function as an intense counter-irritant or be so truly sedative that it is the treatment of choice for relieving pain in acute burns of the youngest babies. In America for some years Eaton Stewart at New Haven has been employing diathermy in all stages of pneumonia; and Crile at Cleveland has been using this current actually during and immediately after serious operations as a means of reducing operative and post-operative shock. Although I am not aware of any literature published in England on the subject of electrotherapeutics in acute ailments, it is clear that Eaton Stewart's pioneer work is beginning to bear fruit, for the medical wards of St. Bartholomew's are wired for diathermy, and, at the West Middlesex, diathermy in pneumonia is now practically a routine procedure.

In a paper I read at the School of Medicine for Women in 1926, my experience of diathermy in pneumonia was limited to six cases in all; one acute, in a child of 6, one unresolved pneumonia, and four broncho-pneumonias in patients varying from the age of 3 to 85. At that time, beyond having treated a somewhat similar number of burns with ultra-violet light, the only recent or acute conditions I had treated in large numbers were fractures and lymphangitis. The high percentage of these cases that received genuine relief and help have undoubtedly accounted for the rapid growth in the number of acute conditions that I have been called upon to

assist during the last two years, both in hospital and in private. Among these cases there are pneumonias of all kinds and descriptions, acute and spreading lymphangitis, peritonitis with temperature and profuse and offensive discharges, acutely septic joints and, last but not least, burns of all degrees.

Selection of Treatment.

In the primary selection of electrical treatment for any acute condition the first essential is to endeavour to visualise the actual pathological condition and the physiological response most desired; and then, with the knowledge of the physiological effects of various currents and current strengths, selection can be made without difficulty, and suitable technique employed with confidence. The simplest type of case to consider is the severe recent injury, and one case in particular comes to my mind.

The patient, a male adult railway worker, had had his pelvis crushed and fractured, and was suffering severe pain, and the region of the injury was greatly swollen and œdematous. The pathological condition here was, therefore, injured, and hypersensitive nerve-endings, muscle spasm and effusion each reacting adversely on the other.

The desired physiological response would therefore obviously be reduction of muscle spasm, of pain, and of swelling. Now the direct current has at its positive pole certain physiologically proved characteristics—namely, anelectrotonus, or the depression of sensitivity in nerve tissues; cataphoresis, or the carrying of water towards the cathode; and the removal of the demarcation currents of injury (Hermann) in muscle. This current, therefore, if exhibited with a technique that brings out these physiological attributes, is uniquely suited for such a case. And so it proved.

Large pads of gamgee wrung out in 1 per cent. zinc sulphate solution were placed over and near the pelvis, especially over the lower abdomen, which was the site of the greatest pain and swelling; an indifferent electrode was applied to a forearm, so that the current could flow in the direction of the lymph stream, and a current of two to four milliampères was utilised for 15 to 20 minutes. On this occasion the apparatus used was what is known as a galvano-set, but in bed cases the new portable direct current apparatus, known as the Medelect, is even more satisfactory. After the first treatment pain was so much relieved that some natural sleep could be obtained, and within two or three days pain and muscle spasm were gone and swelling rapidly diminishing. I have given technical details of this method elsewhere.[1]

Diathermy in Poliomyelitis.

Perhaps the next most simple condition to consider from the pathological point of view is an acute attack of poliomyelitis. Here we all have a vivid picture of an inflamed and congested area of the spinal cord, the inflammation leading to such congestion that the life of the anterior horn cells becomes precarious, many may die, and some recover with difficulty. To restore the normal physiological condition of the cord we would, if we could, at once reduce the congestion and allow circulation in arterioles, capillaries, and venules to carry out its ordinary work of nutrition. We know, however, that the affected parts are deeply placed in a bony canal, and that fomentations on the skin would have no chance of effective action. So we turn to the late Sir William Savory's great maxim, given in his famous lecture, when he came into the lecture theatre, looked at the students, said "Gentlemen, rest all inflamed parts," and for the remainder of the hour never uttered another word. There is not an authority on this ailment that does not lay down emphatically that electrical treatment in the acute stages must never be employed. When, however, we come to their recommendation for electrical treatment in the later stages, these are all of a "stimulative" nature, and the possibility of fomenting the spinal cord region has obviously never been considered. If the inflamed spinal cord lay within reach of fomentations, as does, for example, lymphangitis in an arm, fomentations would undoubtedly be added to the treatment of "rest."

[1] Brit. Med. Jour., 1924, i., 743.

Can electricity provide a current free of any trace of stimulation of such a nature that it can, to some extent, act as a fomentation for so deeply placed and protected a structure as the spinal cord? The answer is, it can.

In diathermy, thanks to the work of d'Arsonval and others, it has been shown conclusively that, when current reversals occur at rates over 50–100,000 per second, all stimulation ceases. Now modern diathermy machines have current reversals from a half to three million times per second according to the way they are made; so even those with only 500,000 reversal have passed the stimulation range many times.

The diathermy current is closely allied to the wireless wave, and on passing through tissues they readily become degraded to heat waves, identical with the heat waves given out by a fomentation, a hot water bottle, or the water in an arm bath—with this difference, that their initial structure is such that they can pass through all kinds of tissues, whether conducting or non-conducting, and where they meet relatively poorly conducting tissues, such as bone, their change into heat waves is more rapid than in such vascular structures as muscles. It is therefore obvious that in diathermy we have a current capable of fomenting the neighbourhood of the injured spinal cord without any vestige of stimulation.

Although these facts have been emphasised, both in France and in England, the prejudice against using electrical treatment during the acute stage of poliomyelitis still remains—because electrical treatment calls up pictures of muscle contractions and stimulation admittedly to be avoided at all costs. In consequence of this very natural prejudice, I have only had experience of two cases during the really acute stages, and, with the known vagaries of this complaint, the mere fact that their pain disappeared rapidly and recovery was practically perfect does not, unfortunately, enable me to claim any specific benefit from the treatment. It is, however, justifiable to say that the clinical response corresponded with the theoretical considerations previously formulated. The technique would be simple and would consist of applying over the spine where the lesion is known to be a metal electrode, covered in two thicknesses of lint, wrung out in super-saturated saline solution. This electrode should be at least 6 in. to 9 in. square, and a similar electrode is placed over the soft parts of the abdomen. The actual size of the electrode should be determined by the area of the soft abdomen. A current of almost 1 ampère is passed for 20 minutes, and, if the pads are bandaged on with a thin rubber bandage, uniform contact will be secured, and the risk of burning be reduced to zero, as pads of these sizes, if carefully applied, will carry nearly twice this current, even in quite a young child, for considerable periods. One has, therefore, a large margin of safety.

Diathermy in Pneumonia.

Exactly the same pathological and physiological considerations arise in cases of pneumonia, broncho-pneumonia, and allied conditions. I will not give clinical notes of the cases that I have treated with diathermy, since my experience of the benefits of this current entirely confirms the work of Eaton Stewart, and his book, "Diathermy with Special Reference to Pneumonia," is a sane and well-balanced treatise on the subject. The technique I employ for diathermy in pulmonary cases is precisely similar to the one just referred to, except that where patients are collapsed or suffering from difficult and hampered breathing the pads are slipped under each armpit, and the patient's elbows are held gently against the pads by nurse and doctor, so that the arm can follow respiratory movements without hindering them in the least. This method entails a minimum of disturbance of the patient.

One recent case of Dr. W. Byam's may be cited as illustrating several points in the application of diathermy in the early stages of pneumonia. In this patient, a man of 73,

with the sputum yielding a nearly pure culture of pneumococci and the lungs showing the early signs of consolidation, the chief anxieties were restlessness, continuous cough, and absence of any desire to sleep. During the first application the cough ceased, the patient fell asleep and had six hours' further restful sleep after the treatment ceased.

I wish to dwell at some length on certain effects of the diathermy current which are not, in my opinion, related to its action as a sedative fomentation. One of the first things that strikes the patient, the observing practitioner, and the technical expert is the restful after-effect, hours of quiet sleep often following the very first application. Another easily made clinical observation is a curious change in the type of respiration, which from being like an inverted V becomes definitely more smoothly undulatory in type. Also in delirious and wandering patients the delirium frequently ceases abruptly during treatment, and the patients converse intelligently.

Physiological Action of Diathermy.

Breathing that becomes deeper and more physiological in type, sleep or rest for periods far longer than could be accounted for by any single fomentation; an improved pulse volume—all these reactions are suggestive of some specific action of the diathermy current on the sympathetic system.

It has long been taught that diathermy acts only by heat, and has no specific action due to its wave-length. The very name of diathermy supports this theory. As I have said, however, diathermy currents are practically identical with ordinary wireless waves (one machine I have has a wave-length of 365 metres). This current, therefore, does not primarily belong to the heat, or infra-red, portion of the ether scale, but it does make itself manifest as heat *after* it has been absorbed, and to appear as such these waves must have first been absorbed and then changed to heat waves.

It is known that other parts of the ether scale such as radium, X rays, and ultra-violet light, have each their own peculiar specific effects, and it is reasonable to presume that diathermy, which only differs in the length of its waves, also has its own specific effects, even if these cannot be immediately recognised.

This being so, the question arises whether there are any clinical indications, other than those already given, that diathermy currents have any specific action, and, if so, on what particular structures do they exert this action.

Let us once more turn to poliomyelitis, but this time to the chronic case, with its cold blue atrophic lower limb. Give such a child diathermy from over the anatomical position of the injured cord to the abdomen three times a week (never at first to the affected limb), and at the end of 12 treatments the limb will be showing signs of increased warmth and improved trophic condition, not only during the actual treatment, but between treatments. What mere heat could do this?

Diathermy is recommended by Osler as the treatment of choice in hyperpiesia, but the effects obtained are not shown on the sphygmomanometer, but in the diminution of cramps, of head pains, giddiness, and indeed of those symptoms of sympathetic derangement of which the patient complains as the cause of his difference from normal health. In Crile's clinic in Cleveland diathermy is equally employed for cases of shock and collapse where the blood pressure is below normal.

For years I have been in the habit of giving abdominal diathermy to those cases of wasting debility associated with gastro-intestinal symptoms, and I use this current as a powerful aid to effective ultra-violet light treatment. If it be allowed that diathermy does have its own specific action, and that this action on the sympathetic system is of the nature of a "governor," there is nothing strange in finding it successfully employed, both in hyper- and hypopiesia, for are not the vaso-constrictor and vaso-dilator fibres themselves fibres of the same sympathetic system? With the acceptance of this theory of its action the observed effects on rest, breathing, &c., in pneumonia and allied conditions are understandable and logical, as are the effects of this current when employed in cases of shock, collapse, and affections of digestion.

It will, I think, be generally agreed that the pathology of shock and collapse is intimately associated with extreme derangement of the sympathetic mechanism. The physiological need is therefore restoration of tone and balance in this system. What is ordinarily done for the patient suffering from severe shock? Heat is applied in all kinds of ways, every effort and device that can be thought of to raise the blood pressure is resorted to; yet I have not heard of, or seen, except in the single case of Crile's clinic in Cleveland, diathermy being employed in shock and collapse if only as a supplier of heat. If my arguments in favour of this current having its own special field of activity carry conviction, what a sphere of research is opened!

A point that is often raised when discussing the advisability of utilising diathermy in serious conditions is that the application of the pads will disturb the patient. In employing diathermy, general metabolic saving can be effected without any disturbance of the patient if electrodes are either bandaged on to the sole of each foot, using the same technique as described above, or to each hand, forearm, or upper arm. It is clear that this method, especially when applied to the feet, constitutes practically no disturbance to the patient. It also obviates any risk of burning, for the portable machines are not capable of giving sufficient current when such a large resistance as leg to leg is in the circuit as will lead to burning, and firm bandaging, such as can be effected in these positions, is the best protection of all. For the last seven years in my department at the Royal Free Hospital infants with poliomyelitis have been treated not only without any trace of burn but with highly encouraging results.

Sepsis and Ultra-violet Light.

In the foregoing survey I have endeavoured to show the principles, pathological and physiological, that make me select either the direct current or diathermy, and I have said nothing about the treatment of septic conditions, such as peritonitis after operation, or other grave infections, such as septicæmia. Here ultra-violet light has a genuine field of usefulness. I have dealt elsewhere with its action in raising the hæmobactericidal power of the blood, but here I may perhaps refer to the possibilities of local treatment of septic cavities or sinuses, such as occur in peritonitis or osteomyelitis.

Provided there is adequate drainage, or, rather, adequate access, I have found that local ultra-violet light, by means of sterilised quartz rods attached to a water-cooled Kromayer lamp, act entirely locally and with a rapidity and effectiveness that suggests almost a special reaction under these conditions. It is easy to formulate reasons why there is no general reaction, even to intensive local treatments; for instance, it is possible to argue that the local reaction is on all fours with milk sterilisation by the mercury-vapour lamp, where thin films of bacteria-containing fluid are brought into close contact with the actual bactericidal rays of this current.

A case of necrosis of the lung provides an interesting illustrative case of this type. This patient, a child aged 6, under the care of Dr. Chodak Gregory, was almost in extremis, when doses of light from a mercury-vapour lamp, at 36 in. for three minutes, were applied to the huge offensive necrotic hole in the chest. From the first application there was a favourable local reaction which rapidly increased, and in a few days the patient was out of danger and made an uninterrupted recovery. In this case the treatment and the response were so obviously connected that the amelioration was clearly the work of the light on the local condition.

Burns.

There is one condition which I have left to the last, partly because it interests me acutely and partly because I can advance no theory that explains satisfactorily why the treatment I now invariably use is so uniformly successful in its results. The condition to which I refer is burns.

For these I employ extremely small doses of ultra-violet light from a full-sized mercury-vapour lamp at 30 in. for two minutes; the burnt surface being either covered with liquid paraffin or ambrine, the remainder of the limb being protected from the rays. The liquid paraffin or the ambrine are highly fluorescent in the presence of ultra-violet light, and therefore diminish the dosage materially, and change the incident ray to another which they give out. The second patient I ever treated by this method had third-degree burns of both breasts, and when doses of light were first administered was in a state of collapse from the repeated anæsthetics and/or pain of the dressings. From the first application of ultra-violet-light re-dressings were practically painless; recovery was uninterrupted, and the patient has since successfully suckled two babies at the breast.

An investigation of burns treated by this method is now proceeding, and I will content myself by recording the facts that pain is more rapidly alleviated by this treatment than by picric acid, tannic acid, liquid paraffin, or ambrine alone, and that healing is more rapid, and that the resulting scar is better. All this happens with a current which can readily cause erythema and desquamation of the epithelium. If the paraffin technique is not employed the pain and healthy formation of elastic epithelium is not helped. It seems to be essential, and the fluorescence of this material would appear to have something to do with the results. This question, and the question whether diathermy has a specific action on the sympathetic, must be left for future research.

Conclusion.

I will close with a plea and a warning. The plea is, that when electricity is to be used in acute illness it should not be asked to do the impossible by being called upon only when the patient is semi-moribund. The warning is, that practitioners should avoid employing persons not medically qualified for giving electric treatments in acute illness unless they have themselves mastered the technique. To emphasise the reality of this warning, I will mention a case recently brought to my notice where the spreading septic condition had been checked by competent and successful surgery, only to be thwarted by an injudicious dose of ultra-violet light, resulting in œdema, with consequent hindrance of the previously adequate drainage, and finally death.

It is therefore justifiable to claim that advances in our knowledge of electrical current now enable us to:

1. Eradicate, when so desired, all stimulative and irritative characteristics inherent in certain types of current.
2. Produce currents with true sedative effects.
3. That in consequence the direct current can now be used with benefit to reduce pain and spasm in recent fractures, &c.; diathermy employed in pneumonia, shock, collapse, &c.; and ultra-violet light in burns and septic conditions, with advantage to the patient.

SALFORD ROYAL HOSPITAL.—At the annual meeting it was stated that the number of patients treated during the year was 49,600. In order to provide the purchase-money for the premises recently acquired for the hospital extension, and to reduce the large bank overdraft, the board of management had been reluctantly compelled to sell hospital investments amounting to over £31,000. Plans have been approved for a paying patients' hospital with 45 beds—a complete block with separate nursing staff and servants. As a result of motor accidents during the past year, 90 in-patients and 144 out-patients were treated in the hospital, at a cost of £514, and the amount contributed was only £34. The expenditure of the hospital in excess of income for the year was £13,209.

Clinical and Laboratory Notes.

FOREIGN BODIES AND NASAL CARRIERS OF DIPHTHERIA.

BY A. H. G. BURTON, M.D. LOND., D.P.H.,
MEDICAL OFFICER OF HEALTH, ILFORD;
AND
A. R. BALMAIN, M.D. LOND., D.P.H.,
DEPUTY MEDICAL OFFICER OF HEALTH.

NASAL carriers of diphtheria bacilli are common, but foreign bodies in the nares, producing a carrier condition, are rare.

Scholes [1] has seen five cases of unilateral nasal discharge (containing virulent diphtheria bacilli) due to foreign bodies in the nose. In THE LANCET in 1922 Keen and Carson [2] described two cases of nasal diphtheria due to foreign bodies, and Barnes [3] one case, due respectively to shoe buttons and a piece of rubber (but it is not stated that the virulence of the organisms was determined). Also Forbes [4] described a case of nasal discharge due to a button in which the organisms were tested and found to be virulent. In none of these cases does a Schick test appear to have been carried out.

Three Cases out of Nearly Two Thousand.

Some idea of the comparative rarity of the condition may be gathered from the fact that out of a series of 1968 cases admitted to the Ilford Isolation Hospital the condition has only been found on three occasions. The following case is therefore of interest:

A boy, aged 6 years, was found at routine medical inspection at school to be suffering from an unilateral nasal discharge excoriating the nares. A swab was taken which showed morphological Klebs-Löffler bacilli (K.L.B.), and the boy, at the request of the parents, was removed to the Isolation Hospital on June 11th, 1929, and placed in a separation ward for observation. A swab from the right nostril was positive for K.L.B., and from the left nostril negative. The organisms found in the nose were tested on a guinea-pig and found to be virulent. The boy was Schick negative, showing that he was a true diphtheria carrier. On careful examination a foreign body was located far back in the right nostril, and with some difficulty was removed with forceps. The foreign body consisted of a rolled piece of material which proved to be a maker's tape from the back of a man's tie. The nasal discharge ceased after the removal of the foreign body. Swabs from the right nostril were positive for K.L.B. two days later, but became negative 11 days later, and were again negative after a further seven days.

Examination of the maker's tape showed that the tie had been purchased in Exeter, and on inquiry it was found that the boy had visited Devonshire in July, 1928, and at that time had been seen playing with the piece of tape, and also with a small stone which he had pushed up his nose. The stone was recovered from the nose, and it was thought that the tape had come down also. The boy returned home in October, 1928, and in January, 1929, the nasal discharge began. He had been taken to a doctor, who had thought he had a polypus. He had never had diphtheria; no diphtheria cases had occurred at the house in Devonshire and none in Ilford. He had only been in Ilford 11 weeks when he was examined at school; previously to that he had resided at Hackney. On inquiry at Hackney no diphtheria cases could be traced as being due to him.

Two other cases have occurred in Ilford:—

A girl, aged 3½ years, admitted to the Isolation Hospital in June, 1928, with an unilateral nasal discharge of two months' duration. Morphological diphtheria bacilli were found in the culture from the nasal swab. A pea was removed from the right nostril. The nasal discharge ceased and two further nasal swabs proved to be negative, but a Schick test was not carried out in this case, nor wa an investigation made of the virulence of the organisms.

A boy admitted to the Isolation Hospital in 1914 suffering from a nasal discharge containing morphological diphtheria bacilli. A shoe button was extruded from the right nostril after a period of seven months, but a Schick test was not

carried out in this case nor was the virulence of the organisms tested. A brother of the boy was, however, admitted to hospital at the same time with a sharp attack of faucial diphtheria, and it is probable that the boy with the foreign body and nasal discharge was a carrier of diphtheria bacilli and infected his brother.

The case which we have recorded in some detail is of interest, as the question arises as to whether the boy was Schick negative because he had immunised himself by infecting his nose with diphtheria bacilli from the foreign body, and so administered to himself small doses of toxin.

Immunisation through the Mucosa.

De Stella,[5] in 1903, showed by experiments on animals that the nasal mucous membrane in diphtheritic rhinitis secretes an antitoxin which neutralises the diphtheritic toxin, and so prevented toxic symptoms resulting. This is probably what happened in the case described. If this is so, a further interesting question arises as to whether it would not be practicable to immunise persons against diphtheria through the nasal mucous membrane instead of by subcutaneous injections.

Peters and Allison[6] have experimented with intranasal immunisation against scarlet fever by spraying the nose every other day with scarlet fever toxin, with the result that a number of Dick-positive persons became Dick negative, while in others the Dick-positive reaction was much reduced in area. It seems theoretically possible to devise a method of intranasal immunisation against diphtheria which would give still more satisfactory results.

If immunisation against diphtheria could be effected through the nasal mucous membrane it would also throw some light on the hypothetical latent immunisation by which natural acquired immunity is supposed to be obtained, for it would appear probable that it is through the nose that such immunity is acquired. It can be supposed that most persons on few or many occasions inhale diphtheria bacilli which produce sufficient toxin in the nose to cause, by repeated doses, immunity to develop, but not enough to cause an attack of diphtheria.

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ORBITAL ABSCESS FOLLOWING REMOVAL OF TONSILS AND ADENOIDS.

BY G. NORMAN CLARK, M.B. ABERD.,
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A GIRL, aged 4 years and 7 months, had her tonsils guillotined and adenoids curetted, and was discharged from hospital the next day. Four days after the operation she was brought up again looking very ill with a temperature of 102·8° F., marked swelling of the right eyelids, proptosis, and restriction of the movements of the eyeball in all directions. On the following day some swelling of the left eye appeared. A deep incision was made below the right supraorbital border, but no pus was found. Two days later there was no improvement in the condition, the eyeball was displaced markedly outwards, movements were very limited, and there was much swelling of the orbital tissues and injection of the conjunctiva. The incision was deepened inwards, and on introducing a sinus forceps pus was found lying deeply outside the lamina papyracea of the ethmoid, the bone here being bare. The patient had an uneventful convalescence. On discharge the movements of the eye were full, there being only slight ptosis. The *Staphylococcus aureus* and the Friedländer's bacillus were cultured from the pus.

I have to thank Mr. Cecil Wakeley for permission to publish this case.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

AT the meeting of this Section on Nov. 1st, with Dr. ASHLEY DALY in the chair, the subject of discussion was

AVERTIN ANÆSTHESIA.

Dr. JOSEPH BLOMFIELD said that avertin was a tri-bromine-ethyl-alcohol, a white crystalline substance which dissolved in water only with difficulty up to 3·5 per cent. The makers had now produced it in a fluid form, in which every cubic centimetre contained 1 gramme. The dose recommended was 0·1 g. of avertin per kg. of body-weight (or two-thirds of a gramme per stone weight). The technique of injection was simple; the solution was run slowly into the rectum by means of a soft tube, which should be passed for four inches; owing to the varying reaction of different patients to anæsthetic drugs it was important that the anæsthetist should be present when the solution was introduced. When a patient had had no more than 4·0 g. he might be unconscious enough to go to the operating theatre. The need for care in dosage was emphasised by a reported case which occurred in this country. A man, aged 25, was prepared for the operation of radical cure of inguinal hernia. Before the avertin he had morphia gr. ¼. The degree of anæsthesia induced by the avertin was not sufficient for the operation, and he was given gas and oxygen. The operation was duly carried out, and he left the theatre apparently in a normal state; yet he never recovered consciousness, and he died eight hours later. The dose given was a safe one, and the autopsy revealed no reason for the death. Dr. Blomfield thought that some undetected error must have been made in the case; nothing comparable to this fatal unconsciousness had come within his own experience.

The induction of unconsciousness following avertin was extraordinarily satisfactory, continued Dr. Blomfield; it seemed to be as pleasant a way of going to sleep as could well be imagined. He had not seen any accompanying excitement. One nervy young man said he felt a strong temptation to try to expel the tube from his rectum; but he was not a good subject for any anæsthetic, since on several occasions he had had ether which he disliked very much, and which made him vomit. Usually respiration became somewhat depressed—i.e., rather shallower and slower—and the condition was not unlike sleep, except that there was somewhat less colour in the face, and stertor easily developed. The blood pressure fell by 10 to 15 mm. of mercury. Often when a patient had avertin unconsciousness the corneal reflex was absent, and yet, if a painful stimulus were applied, a reflex movement occurred, and this would be repeated on the first cut with the knife. The speaker therefore did not rely on absence of the corneal reflex. The best means of knowing that the patient did not need any more anæsthetic was to give strong ether vapour to inhale; if this was taken quietly, without holding of the breath, it was safe to begin the operation. The muscles were relaxed, the breathing was quiet, the circulation was quiet, and the blood pressure was only slightly lowered. Of his own cases, only about a quarter had had a satisfactory anæsthesia with avertin only. Much depended on the patient and the operation. The kind of patient who had given him greatest satisfaction with avertin was the feeble elderly person who was having some such operation as gastrostomy—the kind of patient who sometimes failed to recover after inhalation anæsthesia. Often these old subjects required no other anæsthetic than the avertin. The next satisfactory class were cases of exophthalmic

goitre. On the average, patients who had avertin could be assured of two to four hours' unconsciousness, which was not so deep that it need deter one from using avertin in cases where there was likely to be blood in the air passages. The coma was not so deep as after paraldehyde. He had used avertin for dissection of tonsils, and in other cases where there was sure to be blood in the mouth, and he never had any anxiety on that score.

Summing up, Dr. Blomfield described avertin as a very valuable addition to the drugs available for the anæsthetist. But he thought no attempt should be made to use it as a routine anæsthetic, especially as it was desirable for the anæsthetist to see it actually administered. It gave a very pleasant induction of anæsthesia, and was especially valuable for patients who had had trouble with, or intensely disliked, every other anæsthetic. Also, it added enormously to the safety of such operations as those for exophthalmic goitre.

A Series of 106 Cases.

Sir FRANCIS SHIPWAY said that in the first four or five cases he had anæsthetised with avertin he had used the solid form, while in the remainder of his 106 cases the fluid preparation was employed. He had found that a strength of 2·5 per cent. gave a more even absorption and a more gradual induction than a 3 per cent. solution; also excitement was less likely—though so far he had never seen excitement in any case in which the drug was used. Children might well be given 3 per cent. strength, since they did not retain it as long as adults. Sixty-six of his patients were males, ranging in age from 12 to 72; the ages of the 48 females were from 15 to 66. The patients had also been given morphine and atropine, or morphine gr. $\frac{1}{8}$ and scopolamine gr. 1/150. Sir Francis thought that body-weight was an unscientific guide to dosage; habits, occupation, and environment must all be taken into account. The alcoholic, the active, and the highly-strung person reacted relatively badly. He had used avertin in 17 abdominal operations, including gastrostomy, and in 20 of his cases it had sufficed by itself. In 31 cases gas and oxygen was used in addition, and in 10 ether was added to the gas and oxygen; 3 received chloroform and ether; and 1 was given chloroform for removal of a growth of the tongue by diathermy. Induction he had found to be quiet and smooth, and usually rapid—so rapid, in fact, that unconsciousness sometimes came on in the middle of a sentence. The patient was placed on his side, as a precaution against obstructed breathing. Patients were always of a good colour with avertin, and he had not had need of any respiratory stimulant. If one should be needed, he thought carbon dioxide the best. After avertin the pulse-rate was slightly increased, and the blood pressure fell by about 10 mm.; the maximum fall he had so far observed was 30 mm. The corneal reflex was usually just present, but in ten cases it had been absent altogether. Among tests of the depth of anæsthesia were the application of picric acid or iodine to the operation area, the application of towel clips to the skin, and depression of the lower jaw. Analysis of the urine of these patients revealed no albumin or blood. One man who had his inguinal hernia operated upon developed bronchitis; he had been given gas and oxygen in addition. On three occasions the avertin to be used was found to be unsatisfactory; it was decomposing. After induction of anæsthesia with avertin the rectum was not washed out. The patient could be aroused for any purpose—e.g., to take fluid—and thereafter relapsed into sleep, sometimes for as long as 12 hours. Fatal cases in which the drug was used showed fatty heart muscle and cirrhosis of the liver.

Sir Francis regarded avertin as a safe means of induction, providing an excellent basis for anæsthesia and especially free from after-effects. It was contra-indicated for patients having a rapid fall of blood pressure, and for people with renal disease. Otherwise it was the most delightful and excellent method of anæsthesia induction he had seen.

Discussion.

Dr. JAMES YOUNG (Edinburgh) said that the impressions he received concerning avertin in 150 cases conformed with those already expressed at the meeting. He noted particularly the ease of induction and the comfort of the patient. The method seemed peculiarly suitable for gynæcological cases, because there was no post-operative sickness. After operations on the pelvic floor vomiting was very liable to burst the stitches. In a series of 154 cases under his observation there were two deaths, but in neither could the avertin be held responsible. He had now reduced the preliminary dose of morphia to gr. $\frac{1}{8}$, and this had proved an advantage, though the patient required more inhalation anæsthesia.

Dr. I. N. LEWIS referred to his use of avertin in 28 cases. It was most effective in the case of patients whom he could classify as soft thyroids. Possibly a stimulus to the patient's metabolism might hasten excretion of the drug. Hypothyroid cases recovered from avertin more quickly than others. He had had no unpleasant incidents in his cases.

Dr. H. E. G. BOYLE said he had not had any experience with avertin, but he would have thought that giving patients heavy doses of morphia and scopolamine beforehand put them in a position of danger. He suggested that a much smaller dose of avertin than what was now prescribed might be used as a means of premedication.

Dr. COUX said that a drawback to the use of avertin alone was the length of time it had to be given before the operation. In nearly all his cases he had to use some supplementary anæsthetic.

Dr. C. F. HADFIELD commended the method by which avertin was introduced to the profession in this country by the makers, who recognised its danger unless under expert control.

Dr. R. A. RAMSAY spoke of the efficacy of carbon dioxide as a restorative when a case seemed to be doing badly.

Dr. Z. MENNELL said he had not any great experience of the method, but it was one which he disliked for the ordinary healthy person. The cyanosis which occurred with it meant that attention had to be given to the airway, and certainly administration of the drug should not be left to nurses. He did not think the corneal reflex was a guide to the depth of anæsthesia, any more than it was in the case of hedonal. It would be wrong to use avertin as a routine anæsthetic, and also, he thought, for tonsil and adenoid removals, and for big operations on the mouth.

Mr. C. HOPE CARLTON asked whether in Graves's disease the bromine in the avertin compensated for the absence of iodine in the patient.

Dr. HUGH PHILLIPS spoke of the possibility of employing avertin in association with spinal anæsthesia.

Mr. GEOFFREY KEYNES said that avertin had been used in many of his cases, and he had hoped it would enable ether anæsthesia to be dispensed with, especially in abdominal operations. In a case of gastrectomy the avertin was combined with a local infiltration of the abdominal wall, and in a dose of only 0·08 g. per kg. of body-weight it proved so satisfactory that it seemed to be an ideal form of anæsthesia. He had long felt that for gastrostomy nothing but a local anæsthetic was needed.

SECTION OF OTOLOGY.

HISTORY OF THE MASTOID OPERATION.

IN his presidential address to the Section of Otology on Nov. 1st Mr. W. M. MOLLISON traced the history of the mastoid operation from the seventeenth century to modern times. The first reference in the literature was in 1649 when Johannes Riolanus wrote recommending the trephining of the mastoid process. In its earliest days the operation was performed for the relief of tinnitus, or in order to make a new Eustachian tube. The first operation on the mastoid designed to promote the evacuation of pus was carried out in 1740 by Petit, who used a trephine. In 1776 Jasser operated for suppuration by boring a hole in

the bone, through which he forced lotion in order to drive out the pus; this procedure he repeated on 12 succeeding days. The operation fell into disrepute after it had been performed on the Danish Court physician, Berger, for tinnitus and deafness, with a fatal result. It took centuries to evolve a satisfactory method of opening the mastoid process for the release of pus. The radical mastoid operation dated from about 1889, when Zaufal published the operation generally known as Stacke's operation. In the light of present-day knowledge it was clear that at first many patients were subjected to the radical operation quite unjustifiably, and that the total amount of hearing lost because of these initial errors was incalculable. Fortunately, however, this dark period did not last longer than about seven years. The last phase, dating from 1897, was a conservative one, since the aim of modern surgeons was to save the ossicles and thus to preserve the hearing. Mr. Mollison pointed out that there were many different methods of performing the conservative mastoid operation. The bone was removed from the posterior wall far enough to allow of meatal flaps; the outer attic wall was removed to drain the attic and observe the presence of cholesteatoma and the condition of the ossicles; some removed a bridge; others left just enough to support the membrane. If the attic wall was not removed the aditus was exposed and the condition of the incus investigated; if necrosed the incus was removed. The position of the perforation and the amount of hearing were determining factors in the choice of operation. A number of suggestions had been made with the object of facilitating the healing of the wound left by the operation. The wound could be left open and allowed to granulate; it could be allowed to fill with blood clot. Some flushed it by means of the Carrel-Dakin apparatus and others closed it by secondary suture or filled it with bismuth and iodoform paste before suture. Bone-grafts had been used after irrigation with Carrel-Dakin fluid, and zinc ionisation was yet another method of after-treatment. The main object should be borne in mind, and this was to secure a thorough opening of all accessible cells.

In conclusion, Mr. Mollison said that the real triumph of the mastoid operation would lie in the successful treatment of all cases of acute otitis media, if need be by the Schwartze operation, thus eliminating chronic suppuration. In the future the need for a radical mastoid operation in any case would be regarded as an indication of failure.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

AT a meeting held at Liverpool on Oct. 25th, with Dr. G. W. FITZGERALD in the chair, a paper on

TUBERCULOSIS AND PREGNANCY.

was read by Mr. LEYLAND ROBINSON. It was based, he said, upon the answers to a questionaire submitted to experts in tuberculosis, 200 of whom sent replies. This questionaire dealt with the effect of pregnancy on latent, quiescent, and active types of disease, and discussed the treatment, special attention being paid to the value of therapeutic abortion. The main conclusions were as follows: (1) childbirth is always a danger to the phthisical woman; (2) all forms of pulmonary tuberculosis are affected by parturition—latent, arrested, or otherwise; (3) in the interests of the individual it is desirable that reproduction by phthisical patients should be regulated—sterilisation is neither desirable nor probable; (4) special supervision ought to be made for the treatment of pregnant women with tuberculosis in sanatoriums and adequate accommodation provided for labour and the lying-in period; (5) phthisical women who are pregnant should receive the ordinary sanatorium treatment, including artificial pneumothorax; (6) therapeutic abortion has a limited field of usefulness and should be restricted to special cases of early disease in early pregnancy; (7) special antenatal supervision by a skilled obstetrician is an essential part of the routine treatment; (8) the child must be isolated; (9) lactation must be forbidden.

The PRESIDENT said that his impression was that tuberculous women improved during pregnancy but rapidly grew worse in the puerperium.

Dr. C. R. SCHOFIELD (Southport) spoke of the difficulty of getting a pregnant tuberculous woman looked after. He had just had a case of a young girl who developed acute pulmonary tuberculosis and a tuberculous larynx within a month of term. Eventually he did an induction for her but she was dead in three months. He had seen some tuberculous mothers improve during and between pregnancies and others killed by pregnancy. Much seemed to depend on the stage of the disease.

Dr. J. E. GEMMELL (Liverpool) recalled a case of a woman who showed evidence of phthisis after a miscarriage. After years of treatment she was declared cured (physical signs and X rays) and allowed to become pregnant. At the sixth month the disease reappeared and the patient was dead in two months.

Dr. W. W. KING (Sheffield) mentioned a case which improved during pregnancy and rapidly went downhill after delivery. He urged that the diversity of tuberculous disease be remembered. He quoted statistics from an American hospital showing that in comparable cases under comparable conditions only 3–4 per cent. more pregnant than non-pregnant women showed advance in the disease.

Dr. F. H. LACEY (Manchester) quoted figures from the literature showing that the mortality was very little higher in pregnant than in non-pregnant women, but that it was in the first six months after delivery that the prognosis was worst. He thought that tuberculous disease of the larynx or the presence of toxæmia made the prognosis very serious.—Dr. J. W. BURNS quoted a case of marked improvement during pregnancy under sanatorium treatment.—Dr. PERCY MALPAS said that in a recent German symposium the consensus of opinion was against induction of abortion in all three stages of the disease.—Dr. J. H. WILLETT had interrupted a pregnancy early where it occurred in a healed case.—Prof. DANIEL DOUGAL (Manchester) thought Mr. Robinson's paper would become the standard one on the subject. He added that Rist held that pregnancy was inimical to phthisis and thought that this was due to hyperthyroidism asociated with pregnancy. Rist thought highly of artificial pneumothorax and allowed marriage if sputum was free from organisms two years after operation.

Mrs. DOBBIN CRAWFORD read a note entitled

A Useful Perineal Dressing.

After trying many dressings for perineorrhaphy and colporrhaphy wounds, she had come to use the following emulsion of acriflavine: acriflavine, 0·10; liquid paraffin, 76·65; white wax, 3·25; distilled water 20·00. An interval of 24 to 48 hours was allowed to elapse, and at the latest on the third day—the day on which the aperient was given and before the bowels were opened—dressing was begun with a narrow strip of gauze about three inches long soaked in the emulsion, and by means of forceps laid upon the colpo-perineorrhaphy wound. The dressing was renewed after each micturition, and the results had been satisfactory. The dressing had also proved itself of value after confinements in which there had been great bruising of the vulva. Mrs. Crawford had found the emulsion an ideal perineal dressing. The paraffin kept the perineum dry, the flavine kept it clean or cleared up any incipient infection, while the whole was soothing to the patient.—Dr. BURNS agreed about the value of acriflavine. He had found a 1–1000 watery solution useful for swabbing out an infected pelvis and had noted that it had a considerable hæmostatic effect on an oozing surface.

Mrs. CRAWFORD also showed a uterine tumour for diagnosis; Dr. J. W. BRIDE (Manchester) reported a case of hydatid of the broad ligament; and Mr. A. MCMURRAY described a hydatid in the pelvis.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

(*Concluded from p. 929.*)

SECTION OF VENEREAL DISEASES.

Diagnostic and Other Errors in Questions of Venereal Disease.

Colonel L. W. Harrison said that a young wife had developed a Bartholin's abscess. The husband had previously been cured of gonorrhœa; nevertheless, he was informed that he had infected his wife. Careful investigation showed that the causative organism of the Bartholin's abscess was *B. coli*. Had this investigation not been carried out the case would have had all the makings of a marriage wreck. The subject of his paper had been suggested to him by the consideration of errors of which he quoted a typical example. Ordinary balanitis was sometimes diagnosed as gonorrhœa, and he knew of a case where a mother had been requested to remove her son from a public school because of such a mistake. Dislike of examining the penis at close quarters accounted for many cases where a syphilitic chancre at the meatus or within the fossa had been diagnosed as gonorrhœa; it was common to see cases of tertiary syphilis where the patient denied having had a sore but admitted gonorrhœa, and it was reasonable to suppose that the discharge had been due to an intra-urethral chancre. Omission of microscopical examination led to many cases of simple urethritis being treated as gonorrhœa. A vaginal discharge was often due to other causes than the gonococcus. A diagnosis should not be made on the strength of a naked-eye examination nor on a single microscopic test. A urethral discharge was sometimes due to the breaking down of a prostatic abscess, and this had at times been diagnosed as gonorrhœa on the appearance of the discharge or on the faulty staining of microscopical specimens. Epididymitis, especially if accompanied by a urethral discharge, often suggested gonorrhœa to the practitioner to the exclusion of infections with *B. coli* or *B. tuberculosis*. He had known some cases of right-sided gonococcal epididymitis diagnosed as appendicitis; the absence of rigidity of the rectus and tenderness of the cord at the ischio-pubic ramus should have indicated the nature of the lesion. Colonel Harrison emphasised the value of the microscope, a culture tube with properly made medium, and the complement-fixation test as aids to diagnosis, but pointed out that they did not make unnecessary a careful clinical examination. He thought that innocent prostates and seminal vesicles were often condemned for trouble which lay in the anterior urethra. Proper cleansing of the urethra was an essential preliminary to expression of the prostatic secretion for microscopical examination, as otherwise this might become mixed with pus cells derived from the anterior urethra. In syphilitic infections he deplored the pernicious practice of commencing treatment of early cases on a mere suspicion. Promptitude in commencing treatment was certainly important, but not so important as certainty of diagnosis. He quoted an article by Dr. J. H. Mitchell entitled Menace of the Slightly Positive Wassermann Reaction, where this author related cases in which a faulty diagnosis had been made on a weakly positive W.R. alone, or in conjunction with non-specific dermatoses, the result being the firm establishment of that intractable disease "syphilophobia." He had always taught that if a report of a serum reaction as positive was not supported by the clinical data, another specimen of blood should be examined. Extragenital chancres, he pointed out, were a common source of error. He remembered the case of a chancre of the tonsil being enucleated, which was later sent to hospital as a case of measles, the true diagnosis being reached only when the eruption did not clear up in the time usual for measles. A frequent mistake was to assume that all abnormalities were syphilitic in patients with a positive W.R. Tertiary syphilis of the tongue had led to many epitheliomata being overlooked; on the other hand, gummata of the testicle had been removed under the impression that they were new growths. The tendency in nervous diseases was to think of syphilis and in cardiovascular disease to forget it. In skin rashes occurring during syphilitic treatment the greatest caution had to be exercised; one must consider most seriously whether the rash was not due to the arsenic and on no account continue with the arsenical treatment until it had been clearly established that arsenic was not the cause; neglect to adopt this precaution might easily lead to the death of the patient. Bismuth also, it must be remembered, might cause a troublesome dermatitis. In venereal diseases one must look for and gather all the evidence, and then sift it with judgment and with common sense.

Discussion.

Dr. David Lees said that Colonel Harrison emphasised chiefly the type of case in which venereal disease was wrongly diagnosed rather than that where the diagnosis of venereal disease was overlooked. In any class of patient the medical attendant hesitated to consider such a diagnosis, and still less to suggest it to the patient; his mind was blurred by the moral issue involved. He cited the case of a boy of 8 years with marked synovitis of both knee-joints where the doctor had negatived the diagnosis of inherited syphilis on the high moral standing of the parents; it eventually transpired, however, that the child had been adopted. A common diagnostic error was made in ulceration of the leg; any lesion of this type which was not associated with definite varicosity of the veins, with an atrophic skin, or depressed circulation with trauma, or, in women, with a history of uterine sepsis, must always be suspect. There were many subjects of inherited syphilis who showed few, if any, of the classical stigmata. He quoted a case where a wrong diagnosis of osseous sarcoma was corrected by tracing the family history of the patient's mother, who had a syphilitic ulcer of the leg. He also deprecated the practice of commencing treatment of syphilis on mere suspicion. It was little short of malpraxis to treat the diagnosis of syphilis lightly. Clinical, bacteriological, and serological methods of diagnosis were now so accurate that their intelligent use should make a diagnosis possible in nearly every case. The most difficult ones were perhaps those of herpes genitalis, especially after treatment by strong antiseptics. He deprecated the therapeutic test as a method of diagnosis, and in particular the use of the provocative injection until the end of the fourth week. He noted the frequency with which tuberculous lesions manifesting themselves after an attack of gonorrhœa were diagnosed as sequelæ of gonorrhœa, and quoted instances where the urethroscope was an essential aid to diagnosis.

Dr. Margaret Rorke said that she had frequently encountered a *B. coli* infection simulating gonorrhœa, especially in the young bride and where there had been brutal coitus. She pointed out that a salpingitis, accompanied by gonoccocal urethritis, was not necessarily gonorrhœal; she had seen many cases where the infection was tuberculous. She deprecated the use of the term "weakly positive Wassermann," recommending that the term "doubtful" should be used instead. A patient either had or had not syphilis; treatment should not be administered until the diagnosis was established.

Sir Robert Bolam suggested difficulties in diagnosis presented in lichen planus and in Bazin's disease. A venerealogist should be a fine physician with a broad outlook.

Dr. Gordon Whitehead cited a case of carcinoma of the penis simulating a primary sore. He emphasised the importance of examining the marriage

partner in cases of discharge where the gonococcus could not be demonstrated. The lesson of this discussion was that a thorough and complete examination of every patient was imperative.

Dr. A. C. ROXBURGH described a series of cases where the diagnosis was not obvious, including indurated herpes simulating a primary sore, and a syphilitic rash mistaken for eczema.

Dr. WHEELER HART recalled cases of discharge from the use of too strong antiseptics, and endorsed all that had been said about early and complete treatment.

PREPARATIONS OF BISMUTH IN THERAPY OF SYPHILIS.

Dr. SVEND LOMHOLT (Copenhagen), who opened this discussion, said that bismuth was now adopted by practically all syphilologists throughout the world as a substitute for mercury. It was more efficient and less toxic than the older remedy. Bismuth could be administered only by muscular injection, since it was but slightly absorbed through the skin and intestines. The number of preparations now on the market made it difficult for the doctor to make a right choice. Very little was known with regard to the effects of bismuth on the syphilitic organism and the syphilitic infection itself. The bismuth content of the blood at any time during treatment was always small; therefore bismuth did not act directly on the spirochætes. Dr. Lomholt quoted Levaditi's theory of the formation of a compound of bismuth with protein substances, this compound being toxic to spirochæte. In Dr. Lomholt's experience the best effect in treatment is obtained when large quantities of bismuth are introduced, producing in the organism a high bismuth concentration, which should never, however, reach the point of intoxication. This concentration should be maintained over a long period, but care must be taken that the organism does not become oversaturated with the drug. The essential thing is to obtain a regular and uniform absorption. In intravenous injections the absorption is rapid and regular, but clinical experience proves it to be dangerous. Moreover, the bismuth is rapidly eliminated and therefore daily injections are necessary, a factor which makes the treatment rather troublesome. Subcutaneous injections cannot be recommended; they cause greater pain than the intramuscular method and absorption is slow and more irregular. Intramuscular injection thus is the treatment of election. If a certain amount of bismuth is injected into a muscle and is not immediately absorbed, it becomes encapsuled and the rate of absorption decreases, with impairment of the therapeutic effect. X ray photographs of the nates sometimes demonstrate these encapsuled deposits. The most rapidly and regularly absorbed solution of bismuth is the watery solution. Even small doses, however, cause pain and therefore solutions of bismuth compounds in oil have been employed. Injection of these preparations is less painful, but the absorption of the bismuth is rather slow and irregular. He thought that possibly too much stress was laid by manufacturers and physicians on the production of a painless preparation.

Rates of Absorption and Elimination.

Dr. Lomholt discussed the rates of absorption and elimination of the various compounds of bismuth. He said that the slow and irregular absorption of the oily suspensions is least marked with potassium-sodium-bismuth-tartrate, iodoquinate of bismuth, and bismuth salicylate. The tartrate has the drawback of a varying composition and content of bismuth metal, the iodoquinate has a rather low bismuth percentage, and is rather irritant; but the salicylate has no such drawbacks, and in his view is the most suitable for use in an oily suspension. Of the watery solutions, preference should be given to compounds of restricted solubility. The oxychloride is pure and stable, and therefore makes a good preparation. The daily dose of bismuth metal may be fixed at about 0·5 mg. per kilo of body-weight, higher doses being required with remedies of a slow and incomplete absorption. After four or five injections a thin blue line is generally seen along the edge of the gums; this sign is seen with all intensive treatment and is a sign of strong saturation. The injections should be given in the usual place and manner, but the needle should be retracted slightly during the injection to limit the risk of forcing the fluid into a vein or artery. Should the fluid pass into an artery a serious infarct of muscle and skin may ensue.

No treatment of syphilis should be given, he said, as a mere routine; each single case should be considered by itself. Dr. Lomholt concluded his address by showing tables illustrating the absorption, storage, and elimination of bismuth in a number of animal experiments.

The Fate of the Bismuth.

Mr. V. E. LLOYD said that it was essential to possess an accurate knowledge of the fate of the bismuth used. It was clear from Dr. Lomholt's address that there was considerable variation in absorption, which was dependent mostly on solubility. Well-defined deposits had been seen by X rays 12 to 15 months after cessation of treatment. He asked whether encapsulation had taken place in these cases, and whether the presence of an unabsorbed focus was a counter-indication to further bismuth therapy. If so, what methods could be adopted to promote absorption? He believed that pain varied with the anatomical site and the bulk of the injection. As to intoxication this might perhaps be avoided by giving a rapidly absorbed solution in the early stages and a more slowly absorbed one later. It seemed from Dr. Lomholt's tables that most of the bismuth was found in the organs of elimination and detoxication—viz., the liver, kidneys, and intestines.

Dr. MORNA RAWLINS asked what constituted the toxic point of bismuth therapy. In her opinion the blue line was always associated with pyorrhœa; she herself had never found it in edentulous adults, and rarely in children. Pain was rarely complained of in women and children, and in her view was due more to faulty technique than to the type of preparation used. She asked whether Dr. Lomholt considered that absorption was diminished when the body was saturated with bismuth.

Dr. DAVID LEES asked whether the results of animal experimentation were applicable to human beings. He had yet to see a stomatitis from bismuth in a young child with good teeth or in the edentulous. He also attributed pain largely to faulty technique. Massage was of great value in its elimination. He was not prepared yet to accept bismuth as a substitute for arsenobenzol.

Colonel L. W. HARRISON said he had had difficulty in reconciling the findings of different investigators; he attributed the discrepancies to the use of different animals for experimentation. The blue line was one sign of toxicity, but more attention should be paid to the kidney. It was desirable to know the maximum dose that could safely be given; the tendency was to give too little. Dr. Lomholt had advised against the deep subcutaneous method, but Colonel Harrison had not found this to be painful with the oxychloride, the metal, or the salicylate in oil. There was less danger of intravascular injections if the deep subcutaneous method was used. It had been observed that with massage bismuth appeared in the blood two to three hours after injection; without massage it did not appear for 24 hours. Massage should produce more regularity in absorption.

Dr. TYTLER BURKE suggested that a false premise had been involved; neither arsenic nor bismuth by themselves were direct spirochæticides. He would like to know what Dr. Lomholt's experience of the use of metallic bismuth had been. He himself believed the blue line to be due to the presence of sepsis. In his experience children tolerated bismuth cream better than mercurial cream.

Reply.

DR. LOMHOLT said that it was risky to draw too definite a conclusion from the results of animal experimentation, but mercury experiments with rabbits and with man gave very parallel results. He agreed that faulty technique might cause pain, but there was no doubt that there was a great difference in pain production between the different preparations. In his experience the therapeutic value of colloidal preparations was markedly inferior, although more could be given. Intoxication by bismuth was much rarer than by mercury. Bismuth-treated patients commonly showed the blue line even when they had well-kept mouths; but he agreed that in the absence of oral hygiene the blue line would be found still more frequently. The cause was, of course, the H_2S precipitating the sulphide of bismuth in the gums. It was his definite opinion that, even with perfect hygiene, all people would show the blue line after a course of 10 to 12 injections of an ordinary volume of bismuth. He did not recommend the use of quickly absorbable preparations at first, followed by the more slowly absorbable; he preferred a regular absorptive rate. The amount of bismuth stored in the tissues was only half that of mercury, indicating a more rapid elimination. He would rather make the intervals between the injections shorter, especially as intoxication was less easily reached with bismuth than with mercury. With regard to the correlation of the findings of different experimenters using different animals, he had found that guinea-pigs did not tolerate the injections as well as rabbits; elimination appeared to be constant, however, for all metals with all the animals used. The highest safe dose could not be determined for man from animal experimentation. He was inclined to regard up to 25 mg. per day as a safe dose. It should be remembered that bismuth was given in doses three to four times as big as those of mercury, and often in greater dilution; their relative toxicity could not therefore be fairly contrasted. He had not investigated the deep subcutaneous method with bismuth, and was not aware that it was being used. A Swedish investigator had found that mercury given by this method was painful, and the rate of absorption slower. He had had no personal experience of the use of metallic bismuth; he knew that one form was used in the early days, but had been given up since it caused necrosis. Suspended in oil it was very slowly absorbed. As for percutaneous administration absorption was very very slow.

THE LONDON MEDICAL EXHIBITION.

(*Concluded from p. 950.*)

SURGICAL INSTRUMENTS.

ALLEN AND HANBURYS, Ltd. (Bethnal Green, London, E.), had an attractive selection of surgical instruments of every description and made a special feature of Statham's Improved Tubal Injection Syringe for injecting lipiodol under control of the X ray screen, with a luminous dial to the pressure gauge, allowing it to be read in the X ray dark room. Attention was also drawn to instruments for the introduction of radium needles and radon seeds and to the St. Bartholomew's Hospital Operation Table with new patent self-locking device for obtaining the Trendelenburg position.—DOWN BROS., LTD. (21 and 23, St. Thomas's-street, London, S.E.), presented a large selection of surgical instruments and appliances, prominent among which were Ivan Magill's Portable Intratracheal Apparatus for chloroform, Lane Joynt's skin-grafting instruments for large grafts, and sets of diagnostic instruments fitted with electric light. Putti's orthopædic operation table, for which Down Bros. are the sole agents, also received attention.—MAYER AND PHELPS, Chiron House (59–61, New Cavendish-street, London, W.). The high standard of surgical instruments made by this firm is well maintained, and among notable instruments to be seen were Rowbotham's Tracheal Intubation Apparatus for use via the mouth or nose, allowing a constant positive pressure and preventing the possibility of aspirating fluids into the lungs, Forceps for the introduction of radium capsules as made for the Radium Institute, and Pepper's Hæmostatic Guillotine for bloodless tonsil enucleation.—ARNOLD AND SONS (Savory and Moore (1928)) (50–52, Wigmore-street, London, W.) made a feature of their improved and inexpensive pedestal operation table on oil pump base, while attention was called to their "Clearlite" forehead lamp and to their anæsthetic apparatus and blood pressure instruments. A notable exhibit was the rubber sponge cushions for use on anæsthetic stools.—THE HOLBORN SURGICAL INSTRUMENT CO., LTD. (26, Thavies Inn, Holborn Circus, London, E.C.), displayed a large variety of chrome-plated surgical instruments and their Holborn pedestal operation table attracted much attention—mounted on an oil pump it has a chrome-plate top which tilts to any angle and if required the table can, in addition, be fitted with a lateral movement.—Subaqueous Intestinal Bath Apparatus (Agent: F. Rossendale, The Manor Cottage, Gerrards Cross, Bucks). Demonstrations of this apparatus were given, its merit being the ease with which it can be adjusted to the patient, the facility with which the returning liquids and solids are disposed of, and the prevention of obnoxious smell.—PHILIPS LAMPS, LTD. (145, Charing Cross-road, London, W.C.). The Metalix-Portable X ray outfit exhibited by this firm attracted a continuous stream of inquirers, for the apparatus can be erected in a few minutes and after attachment to any convenient light socket radiograms can be taken by simply pressing a button. The two packages in which the complete outfit is contained can be carried wherever required. The apparatus is so insulated that there is no danger from electric shock. A wide range of X ray tubes was also included in this exhibit.—Mr. R. H. DENT (309, Oxford-street, London, W.) showed a wide range of "Ardente" appliances for the deaf suitable for many and varied cases. Some of the appliances are inconspicuous, and all of them give good tonal results.—BRUCE AND EVELYN, Surgical Corsetières (47, Wigmore-street, London, W.), had an interesting display of corset belts, and belts for all kinds of surgical conditions, special attention being paid to lightness and efficiency.—DOMEN BELTS CO., LTD. (456, Strand, Charing Cross, London), presented a wide selection of belts, based on physiological and anatomical considerations, for pregnancy, accouchement, and general support, for hypogastric and gastroptosis, for floating kidney, as well as an umbilical hernia belt.—THE SCHOLL MFG. CO., LTD. (Granville-square, London, W.C.), showed a wide selection of appliances constructed on anatomical principles for the relief and correction of acquired foot troubles.—SHORT AND MASON, LTD., "Tycos" (Aneroid Works, Macdonald-road, London, E., and at Atlantic House, Holborn Viaduct) exhibited their well-known sphygmomanometers and clinical thermometers as well as an extremely sensitive recording barometer. All these instruments are of excellent quality.—BRUCE, GREEN AND CO., LTD. (14, 16, 18, Bloomsbury-street, London, E.C.), presented a variety of well-made optical and electrical apparatus, including ophthalmoscopes and retinoscopes, optical trial sets, and sets electrically illuminated for the examination of the ear, nose, and throat.—KODAK, LTD. (Kingsway, London, W.C.), made an effective display of their clinical cameras, lantern slides, films, intensifying screens, developing tanks, and accessories for X ray dark rooms, and photographic materials for still and moving pictures of medical subjects.

MILK AND FOODS.

GLAXO LABORATORIES (56, Osnaburgh-street, London, N.W.). The various forms of dried milk exhibited by this firm included Sunshine Glaxo or

humanised milk with added Ostelin, a physiologically standardised concentrate of vitamin D, prepared by irradiation; Standard Glaxo, a full-cream milk; Glaxo Malted Milk; and Glax-Ovo, described as a food drink. Ostelin is available in many forms including colloidal calcium with "Ostelin" Vitamin D ampoules for subcutaneous injection, tablets, and in emulsion with vegetable oil and pure calcium glycerophosphate.—LIBBY, MCNEILL, AND LIBBY, LTD. (8, Great Tower-street, London, E.C.). The merits of Libby's evaporated milk were demonstrated at this stall, and extracts from scientific literature were distributed showing that the vitamin content of evaporated milk is as satisfactory as that of raw milk. It was also pointed out that the vitamins A, B, and D were not lost in Libby milk, but that orange-juice or tomato-juice should be given in conjunction with it to supply vitamin C.—TRUFOOD, LTD. (Wrenbury, Cheshire, and Lever House, Blackfriars, London), displayed their various pure milk products, calling special attention to Trufood full cream which can be used from 9 months onwards and for general purposes, pointing out that it is particularly useful to follow breast feeding or Humanised Trufood. Secway, a pure sweet whey in powder form, also received much attention.—COW AND GATE, LTD. (Guildford, Surrey), attracted attention with their display of Cow and Gate milk prepared by a special roller process under the most scientifically controlled conditions and the claim is made that the milk is adjustable to any infant condition. Prominence was given to Lacidac, which is the dried milk to which lactic acid has been added. This is prepared for use by the addition of hot, boiled water and is recommended in convalescence from acute infections, marasmus, eczema, and in diarrhœa and vomiting.—NESTLÉ AND ANGLO-SWISS CONDENSED MILK CO. (6, 8, Eastcheap, London, E.C.), in addition to their full-cream condensed milk, in which the vitamins and milk salts are retained, showed milk food in powder form prepared from full-cream milk, malted wheat products, and tasteless principles of cod-liver oil. Lactogen, made from dried milk with the addition of lactose and approximating to mother's milk, also received marked attention.—BOVRIL, LTD. (148–166, Old-street, London, E.C.). Bovril, which was effectively displayed both in the form for general use and the unseasoned Invalid Bovril, is too well known to need any description.—HOVIS, LTD. (London, Macclesfield, Manchester, and Bristol), had an exhibit showing the superiority of Hovis Bread in regard to vitamin B content, and demonstrated that one slice of their bread weighing 1 oz. contains as much vitamin as 2 oz. of wholemeal and as 5 to 6 g. of fresh yeast.—BENGERS FOODS, LTD. (Otter Works, Strange ways, Manchester), in addition to their well-known food, displayed Liquor Pancreaticus, Liquor Pepticus, Liquor Thyroididin, Pancreatised Lentil Flour, and other digestive preparations.—BRAND AND CO., LTD. Mayfair Works, Vauxhall, London, S.W.), presented their preparations which are made under hygienic conditions, and include Essence of Beef and Chicken, Meat Juice, Liquid Peptone, and Ferrocarnis, a pleasantly flavoured solution of iron in organic combination with concentrated meat juice.—CADBURY BROS., LTD. (Bournville), exhibited samples of their well-known chocolate and cocoa.—FRANK COOPER, LTD. (Victoria Works, Oxford), had an attractive display of their popular "Oxford" Marmalade, which has a distinct flavour of the Seville orange and is made under strictly hygienic conditions, while every process is done by hand and no preservative or colouring matter is used. In it all the essential properties of the orange are preserved in a high degree. Horsedish Cream, made from freshly grown horse-radish and the best dairy cream without preservatives, as well as an appetising fresh mint jelly, also received much attention.—H. A. G. COFFEE CO., LTD. (40, Theobald's-road, London, E.C.), had an interesting exhibit, showing by models and pictures the action of caffein on the human system and of their coffee from which the caffein has been removed. This pure coffee is not affected either in flavour or aroma, as the sample cups offered to visitors demonstrated.—W. GAYMER AND SON, LTD. (Attleborough and London), whose exhibit at this exhibition is the first since 1912, are cyder makers to the King, and they specialise in dry cyders for medical requirements. The cyder, which is made from English apples only, is pleasing to the palate and was much appreciated by the many inquirers at the stall.

MISCELLANEOUS.

KOLYNOS INCORPORATED (Chenies-street, London, W.C.) showed their well-known preparations, including dental cream which is antiseptic and does not in any way injure the enamel of the teeth; liquid Kolynos, which can be used as a mouth-wash, gargle, or spray; a denture powder, a new preparation for thoroughly cleansing artificial teeth and dental plates; as well as a delicately scented skin soap.—J. C. ENO, LTD. (Fruit Salt Works, Pomeroy-street, London, S.E.), displayed their useful saline laxative; and THE THERMOGENE CO., LTD. (160, Piccadilly, London, W.), the scientifically prepared cotton-wool sold under the trade name, which stimulates the circulation in the affected part of the body to which it is applied and relieves congestion and inflammation.—UNITED WATER SOFTENERS, LTD. (Aldwych House, London, W.C.), demonstrated their "Permutit" household water softeners which do not impair the palatability of the water. Plants suitable for softening water on a larger scale were also shown.—KEEN, ROBINSON AND CO. (Carrow Works, Norwich), among other exhibits, showed Almata, described as a food for infants, a galactagogue, and a supplementary diet for invalids: and Keen's Mustard Ointment.—THE MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY, LTD. (330, High Holborn, W.C.). This mutual Society of medical and dental practitioners, which was founded in 1884 for the purpose of enabling doctors and dentists to obtain sickness, accident, and life insurance on more advantageous terms than those offered by proprietary companies, was well represented, and members of the staff were constantly in attendance to demonstrate the advantages of insuring with a professional society.—THE MEDICAL AGENCY (William H. Grant, Watergate House, 15, York-buildings, Adelphi, London), which undertakes all forms of medical accountancy and obtains capital for medical practices through banking channels, in addition to negotiating for medical and dental practices, and effecting all forms of insurance, demonstrated to medical men the services offered by the firm.

SPAS AND MEDICINAL WATERS.

In addition to the interesting displays of photographs and literature by the English spas of Bath, Buxton, Harrogate, and Torquay, INGRAM AND ROYLE, LTD. (Bangor Wharf, 45, Belvedere-road, London, S.E.), made an imposing show of mineral waters, salts, and pastilles, including Carlsbad Water, Hunjadi János, Vichy-Célestins, and Contrèxeville-Pavillon.

MEDICAL AND SCIENTIFIC PUBLISHERS.

BAILLIÈRE, TINDALL AND COX (7 and 8, Henrietta-street, London, W.C.) exhibited a large number of books published by their own and other firms, and WILLIAM HEINEMANN, LTD. (99, Great Russell-street, London), also showed a large number of the latest medical and surgical works, while H. K. LEWIS AND CO., LTD. (136 and 140, Gower-street, and at Gower-place, London, W.C.), in addition to medical books published by the firm, called attention to their medical and scientific library. Notable exhibits at this stall, which provoked many inquiries, were the Register Doctors' Cabinet for holding index system cards and the Roll-Top Cabinet made specially to hold panel cards and envelopes issued by the Ministry of Health. These cabinets are soundly constructed in oak and are very convenient fitments for the surgery.

Reviews and Notices of Books.

ENDOCRINE DISORDERS.

By Prof. HANS CURSCHMANN, M.D., D.Ph., Director of the Medical Clinic, University of Bostock. London: Humphrey Milford, Oxford University Press. 1929. Pp. 188. 12*s*. 6*d*.

"Endocrine Disorders," by Prof. Hans Curschmann, has recently been added to the series of Oxford Medical Publications, and is a thoroughly clinical and practical monograph. Endocrinology has advanced so rapidly during the last 50 years that the standard text-books of medicine have scarcely succeeded in keeping pace with it. The sections devoted to endocrine subjects are meagre compared with those which bear such established headings as circulatory or alimentary disorders. On the other hand, the special monographs on endocrinology tend to supply the practitioner with a mass of anatomical, physiological, and experimental data which he does not require. This book is compact, and gives a clear account of the various glandular syndromes in under 200 pages. The author has drawn largely from the work of the mid-European authorities and from his own wide personal experience. The chapters on disorders of the thyroid and parathyroid deserve special praise. The author discusses the various forms of Graves's disease, pointing out that the metabolic, circulatory, and other symptoms of these syndromes are essentially the same, and that there is a ready transition between the different types. The factors concerned in hypoparathyroidism, tetany, calcium deficiency, and spasmophilia are clearly defined. In the chapter on pituitary disorders there are one or two notable omissions. No reference is made to the suprapituitary craniopharyngeal pouch cysts and their symptoms, or to the syndrome associated with the chromophobe adenomata. On the other hand, the accounts of acromegaly and of diabetes insipidus are admirable. This chapter also includes an interesting general discussion on the ætiology of endogenous obesity and emaciation. Dr. F. Prange coöperates in the chapter on gonad dysfunctions. In the remaining chapters the arrangement of the subject matter, in itself very complete, is not wholly satisfactory. One finds, for instance, scant mention of the sex disturbances associated with tumours of the adrenal cortex in the adrenal chapter, but a good account in that dealing with the pineal gland. Here also a considerable amount of space is devoted to a discussion of the various types of infantilism, though there is, of course, no suggestion in the text that the pineal is an ætiological factor in any of them. As a supplement to the standard text-books of medicine the monograph can be recommended both to students and practitioners.

DISEASES OF THE MOUTH.

Third edition. By STERLING V. MEAD, D.D.S., Professor of Oral Surgery and Diseases of the Mouth, Georgetown Dental School. London: Henry Kimpton. With 336 illustrations and 43 colour plates. Pp. 727. 42*s*.

NOT many years ago a volume of over 700 pages would have been considered a liberal allowance for an account of the whole of dentistry. But the last few years have seen the appearance of many large volumes devoted to various aspects of odontology. We are constrained to admire the industry of the writers, chiefly trans-Atlantic, who produce these massive tomes, the enterprise of the dentists who purchase them, and the advances of such a comparative young and limited branch of medicine which have produced such an extensive literature. There remains some doubt, however, whether so vast a literature is really justified by the growth of our knowledge, and whether books on dentistry could not be made more concise without detriment.

The fact that three editions of this work have been called for in less than a year is a tribute to its worth which is on the whole merited. It represents an attempt to include in one work all the diseases of the mouth, both those connected with the teeth and those arising from other sources. Such strictly dental conditions as periodontal infections, diseases of the dental pulp, malformations of the teeth, malocclusion, and impacted teeth are dealt with, and in addition there are accounts of tumours innocent and malignant, of specific infectious diseases such as syphilis and tubercle, diseases of the blood system as they may affect the mouth, diseases of the mucous membranes, and so forth. Its appeal is thus to dentist and to doctor. The convenience of a book which covers the whole range of stomatology cannot be denied. The strictly dental section is sometimes disappointing, as if the author had included it only for the sake of completeness and without conviction that it would be helpful. The five pages devoted to diseases of the dental pulp are inadequate, and so are the three or four on malocclusion. On the other hand, the accounts of the various disorders of the mucous membrane are excellent and give the dental reader a good idea of common conditions which his hospital training tends to leave out of account. The chapters on tumours are also good, though the account of the odontomas ignores much valuable work done in this country. In the description of salivary calculus there is no mention of the work of A. Bulleid on the rôle of the leptothrix in its formation.

There are inaccuracies and omissions, and in some ways this voluminous work seems to give a curiously scrappy effect. But on the whole it is a very sound and informing book. The bibliographies are full and international, while the illustrations, especially the coloured plates, are excellent. Its rapid popularity is not surprising.

PREVENTION OF HUMAN TUBERCULOSIS OF BOVINE ORIGIN.

By WILLIAM G. SAVAGE, B.Sc., M.D. Lond., D.P.H., County Medical Officer of Health, Somerset. London: Macmillan and Co., Ltd. 1929. Pp. 195. 10*s*. 6*d*.

Dr. Savage calculates that the number of deaths due to tuberculosis of bovine origin in this country was, in 1927, 1945. The table from which this figure is quoted was prepared on the assumption that 1 per cent. of the respiratory and 23 per cent. of the non-respiratory tuberculosis in each year is of bovine origin. The total deaths calculated on this basis have fallen from 3382 in 1918 to the figure quoted above. Dr. Savage admits that the method employed for determining these figures may be open to question, but it would be difficult to devise a more satisfactory method of arriving at statistics without a very elaborate bacteriological investigation of fatal cases. The number of cases of bovine origin which recover cannot be ascertained, since the notification statistics are not informative on this point.

On the prevalence of tuberculosis in cattle the author gives various methods of arriving at reliable data. Unfortunately, none of these methods is free from difficulties, but the various figures quoted from numbers of counties and county boroughs show that the percentage of tubercle-positive milk samples examined varies from 0 to 13·2 per cent. Dr. Savage also examines, with great care, the various methods which have been suggested, and those which are in actual use for the prevention of bovine tuberculosis. A detailed investigation of these points occupies the greater part of the second half of the book. The author deprecates attempts to tackle the reduction of bovine tuberculosis in a piecemeal fashion. If anything of value is to be done a large and comprehensive scheme must be evolved, including all sides of the question, bacteriological, veterinary, and agricultural. The production of an artificial immunity against the tubercle bacillus and the rearing of resistant herds are methods still in the experimental

stage. Dr. Savage discusses Prof. Calmette's work with B C G in detail, and leaves us with the impression that he is not hopeful of its ultimate prospects. He also deals at length with the theory held in some quarters that the bovine tubercle bacillus is of lower virulence than the human; he finds that the evidence to substantiate the theory is inadequate. On the question of the immunising value of tuberculous milk Dr. Savage is quite definite—it is, he says, "a procedure so unwarranted that I feel its advocates cannot have realised its full implications."

Every public health worker and every bacteriologist specially concerned with the tuberculosis problem will be glad to keep this book upon his shelves as a large source of unbiased information. In his preface the author states that the literature of his subject reveals neither unanimity on the remedies nor agreement on the facts. He himself has gone far towards clearing the ground.

THE NERVOUS CHILD.

Fourth edition. By H. C. CAMERON, M.D., F.R.C.P., Physician in Charge of the Children's Department, Guy's Hospital. London: Humphrey Milford, Oxford University Press. 1929. Pp. 249. 7*s*. 6*d*.

THE greater part of this popular book is unaltered, but it has been enriched by a new chapter on the underlying disturbances of metabolism in the nervous child. Here Dr. Cameron has set out in a lucid and persuasive manner the views to which he has from time to time given expression on the relation of ketogenesis to the various manifestations of neurosis in childhood. The sudden disturbances of health to which certain children are liable, varying in their form but typified by cyclic vomiting, are associated with a failure to mobilise sufficient carbohydrate to achieve the complete metabolism of the fat which has been absorbed. It is here suggested that this metabolic disturbance may be dependent on a temporary functional impairment of the suprarenal glands, the acidosis itself producing secondary results such as catarrh of mucous surfaces and attacks of bronchial asthma. Dr. Cameron does not pursue further the ætiology of the suprarenal insufficiency, but he implies that a diet too rich in fat may be a contributory factor; he stresses the fact that the symptoms are seen more often among the children of the well-to-do than in hospital practice. The principal lines on which these disorders may be combated are an adjustment of the diet (for which full details are given) and the administration of alkali and of glucose. This chapter adds considerably to the interest of the book; it also, however, introduces into it material which is somewhat more contentious than the original chapters. It will appeal to the reader as a brilliant exposition of one view of a question on which unanimity has not yet been reached.

USE OF SYMPTOMS IN DIAGNOSIS OF DISEASE.

Ninth edition, thoroughly revised. By HOBART AMORY HARE, B.Sc., M.D., LL.D., Professor of Therapeutics and Diagnosis in the Jefferson Medical College of Philadelphia. London: Henry Kimpton. Pp. 528. 30*s*.

IN the present preface to this familiar book Prof. Hare quotes Dr. Maitland Ramsay's words: "At the present day the purely clinical side of medicine is spoken with a certain condescension and is apt to be undervalued. . . . There is too little study of what used to be called the face and mind of disease." This book has been designed according to the plan which is actually followed in practice—namely, to build up a diagnosis by grouping the symptoms. For instance, instead of describing locomotor ataxia, the author provides a section on the various forms of loss of power in the legs in which ample data for differential diagnosis between various nervous diseases will be found. Similarly, the short but excellent chapter on coma covers a great variety of diseases, all producing this important symptom.

The plan adopted implies, consequently, the power of the author to pass on to his reader his experience of symptoms in practice in such a way that they may be readily assimilated and correlated with the general experience of medical men. The chapter headings give a key to the arrangement of the work. The face includes expression, colour, deformity, paralysis, and spasm; the skin—its colour, eruptions, scars, moisture, dryness, anæsthesia, hyperæsthesia, and paræsthesia; and the tongue (to take a third example), general appearance, coating, fissures, ulcers, eruptions, atrophy, hypertrophy, paralysis, tremor, and spasm. There are excellent chapters on abdominal disease, on the nature of the fæces, on vomiting, and on the thorax and its viscera, each built up on the symptomatic plan. The chapter on the eye deserves special mention on account of its admirable illustrations and its explanation of the art of diagnosis in plentiful supply throughout the whole volume.

This book has been and will be widely read by all and especially by those who have felt that in recent years the scientific aspect has unduly overshadowed the art of medicine.

JOURNALS.

LIVERPOOL MEDICO-CHIRURGICAL JOURNAL.—Efforts to restart this journal, the organ of the Liverpool Medical Institution, which ceased to appear during the late war, have been successful, and the thirty-seventh volume appears this month. It contains a number of interesting papers, the first of which is the inaugural address on Harvey delivered by Prof. John Hay, at the opening of the ninetieth session of the Institution. Dr. C. O. Stallybrass, assistant medical officer of health, writes on acquired immunity in human populations, Mr. Watson Jones on the treatment of fractures by intramedullary pegging, and Mr. Howel Evans on some hæmorrhagic conditions. Dr. I. Harris publishes an article on the diagnosis of chronic myocarditis by means of the electrocardiograph, and Dr. M. Datnow discusses the effect of lead on the tissues. Dr. Stuart McAusland advocates the treatment of varicose veins by injection, and Dr. Alston Hughes discourses on "Vision and Vocation." The journal includes the transactions of the Institution and reviews. As the foreword observes, a scientific society without transactions is as imperfect as a man without a shadow, and we congratulate the journal on its renaissance.

DISEASES OF THE PITUITARY BODY.—Dr. O. Leyton writes that our reporter misunderstood his words at the meeting of the Royal Society of Medicine on Oct. 22nd (THE LANCET, Oct. 26th, p. 877). "I described," he says, "some observations which I had made years ago showing that the antidiuretic potency of an extract of pituitary gland did not depend upon its oxytocic content and then said these observations were confirmed by the separation of vasopressin and oxytocin. I did not claim that my observations had anything to do with the separation of these two bodies. I then went on to give evidence which I thought tended to prove that, although vasopressin controlled diuresis, nevertheless it was not the actual antidiuretic body. Of this I had not absolute proof because the observations were too few and a vital factor was the accuracy with which the vasopressin content in a solution was estimated."

ROYAL VICTORIA HOSPITAL, BELFAST.—Dr. J. E. MacIlwaine has resigned from his position of physician to the hospital; he has been elected a consulting physician with special charge of the electrocardiographic department. Dr. S. B. B. Campbell has been promoted to the rank of physician, and Dr. J. T. Lewis elected to the post of assistant physician thus rendered vacant.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 9, 1929.

TANNIC ACID AND SECONDARY SHOCK.

HOSPITAL registers show for the last 25 years a striking reduction not only in the number of cases of burns admitted, but in the extent of the lesions, the mortality, and the ratio of children to adults. At the London Hospital, for example, admissions of burns in children under 12 have fallen from 150 in 1904 to 38 in1928 and the mortality percentage from 26·5 to 6·3. The decrease has been steady. Improved living conditions, the substitution of electricity for oil lamps and gas as a source of light, factory and workshop regulations, and the Children Act of 1908 have all contributed to the change. This Act, which makes it an offence to leave a child alone in a room with an open fire, has been effective beyond its immediate application by drawing the attention of parents to the gross dangers of burning and scalding accidents.

Most deaths from burns occur in the period of secondary shock. This manifests itself at a varied interval after the accident, usually on the second or third day, and is marked by the clinical picture of an acute toxæmia. The symptoms are now generally attributed to the absorption of toxins from damaged tissues; the toxins have not been isolated but are probably derived from lysis of the skin proteins. Excision of the whole damaged area therefore should have had, and has had, excellent results, but its limitations are obvious. Dr. E. C. DAVIDSON, of Detroit, therefore sought a means of fixing the toxins before their absorption. In 1925 he published a method of treating burned areas with an aqueous solution of tannic acid, thereby producing a dry brown scab which seems to imprison the toxins. Underneath the scab the reparative processes proceed naturally. Many of those in charge of hospital clinics in this country have adopted this method of treatment with enthusiasm, others have given it but lukewarm praise, while some have not tried it. In view of the important practical and theoretical considerations involved, the Medical Research Council invited Mr. W. C. WILSON, who is working in the department of surgery of the University of Edinburgh under Prof. D. P. D. WILKIE, to put together and publish the results of this mode of treatment obtained at the Royal Hospital for Sick Children, Edinburgh. His report was summarised in THE LANCET last week, and in our present issue we set out instructions for first-aid treatment by tannic acid. Mr. WILSON confirms the high claims made by Dr. DAVIDSON. His assurance that the mortality in hospital cases of children under 10 years has been reduced from 38·7 to 10·5 per cent. must be assessed in relation to the lowered mortality following burns in other hospitals; far more convincing is the statement that deaths during the period of secondary shock or acute toxæmia have fallen from 80 to 23 per cent. and that the area of skin involved, on which prognosis has usually been based, can be larger without danger to life if this treatment is followed. The involvement of 30 per cent. of the total body surface in adults, and of 11 or 12 per cent. in children under 10, has been regarded as almost certain to prove fatal. In Mr. WILSON'S series, 35 children were burnt to the extent of 12 per cent. or more of the body surface, and of these 27 recovered. These figures furnish strong evidence of the efficacy of tannic acid, and if we add the alleviation of pain and the escape from frequent dressings which the method provides we are surely in a position to welcome a notable advance in therapeutics. It would be interesting to have figures from other institutions in this country; the Edinburgh mortality figures appear to us exceptionally high. Hospitals in cities where the number of severe burns admitted is comparatively small may not yet have been stimulated to try the method. It is essential to remember that unless the technique is studied and applied in detail, the method is not likely to give the best results. All loose epithelium must be separated and the surface carefully cleaned, for the problem of sepsis, should it arise, is certainly not diminished by the tanned pellicle. Fomentations and other moist applications may not be used over the scab since they seem to liberate the toxins.

Although most suited for use in hospitals since it entails anæsthesia, thorough cleaning, hourly spraying till the tan forms, drying appliances, and protective cradles, this treatment may also have a wide scope where circumstances do not favour such a complicated technique. The provisional scheme of first-aid treatment drawn up by Mr. WILSON for use in mines and other places where burning injuries are not uncommon involves the use of compresses soaked in the tannic acid solution. The drawback may be sepsis, for it is noteworthy that in Mr. WILSON'S experience the deaths from this cause are not noticeably diminished. It is thus of prime importance that better prevention and control of infection should be attained and investigations in this direction are being pursued. There is no suggestion that tannic acid is an emergency measure of choice which should be kept in the home and used for the routine treatment of all burns. In fact, as Dr. D. A. COLES points out in our correspondence columns, for the present it is best used only under medical supervision. Small superficial burns of the first degree are likely to heal quicker when treated with some simple dressing than when exposed to the astringent action of tannic acid, while those of the second degree are no less likely to become septic. A safe rule at present is to attempt this treatment when the burn is severe enough for secondary shock to be anticipated, for there is ample evidence that the shock will be considerably diminished by its use.

THE LAW OF WATER-SUPPLY.

THE Advisory Committee on Water has just published[1] the Second Report of its Legislative Subcommittee. The First Report dealt with the law of underground water; the Second Report proposes detailed reform of the law of water-supply. More than 80 years ago Mr. BOOTH, Counsel to the Speaker, framed a series of Clauses Consolidation Acts, dealing with railways, companies, land acquisition, gasworks, and so on, which collected the sections most frequently recurring in local Acts, and thus, by making available a code for incorporation in the special Act governing an individual undertaking, brought great advantages of brevity and uniformity to local legislation. One Act of this series was the Waterworks Clauses Act of

[1] H.M. Stationery Office. Pp. 82. 9*d*.

1847, a general code which, though amended in 1863, hardly satisfies the needs of to-day. In inquiring into existing legislation the Subcommittee has closely examined this Act of 1847 and also the successive provisions of the Public Health Acts, the Model Bills and Clauses of the House of Lords, and the precedents introduced into local Acts on the initiative of progressive bodies. Everywhere the Subcommittee finds different powers and different procedure; it considers that the time has come for a fresh consolidation of the law, a new Waterworks Clauses Act for uniform incorporation by undertakers, and a general amending and equalising statute which will advance the position all along the line.

It was hardly to be expected that a code fashioned 80 years ago should keep pace with the growth of greater efficiency in water-supply and the extended requirements of modern sanitation. Thus among other anachronisms is the notion that baths and water-closets are exceptional luxuries outside the normal range of "domestic supplies" and justifying additional water charges. Parliament nowadays stipulates for the condition that no extra payment be demanded in respect of the first water-closet in a house. The Report proposes a definition of domestic supplies which will cover supplies for water-closets and for "baths of capacity not exceeding the prescribed number of gallons." Though the Subcommittee has drafted a permissive clause enabling the supply of water by meter for domestic purposes if the consumer so prefers, it does not recommend the compulsory metering of domestic supplies. Economy in the use of water may be an enemy of public health. Waste naturally affects finance. Gas companies (as CLIFFORD observed in his "History of Private Bill Legislation") have made better profits than water undertakings, although they sell an article which usually costs more to produce. But gas companies have the benefit of a metering system which checks waste and—charges not being based on rateable value—causes rich and poor alike to pay for what they consume. Metering might promote economy of water consumption in areas where shortage is possible, but there are other ways of preventing waste. Thus the Subcommittee advocates fuller provisions for penalising waste, misuse, or contamination of water, better powers of making and enforcing by-laws, closer attention to maintenance and repair of fittings, and the fixing of meters on service pipes and mains and stop-cocks on supply pipes. This last suggestion not only helps the detection of waste and the cutting off of supply where water is misused; it also avoids unnecessary disturbance of the roadway surface now so elaborately constructed and so heavily used by traffic. Another recommendation is that supply pipes under highways, connecting water mains with private premises, should no longer belong to private owners but should be handed over to the water undertaking with the liability for upkeep at the latter's expense. Further proposed reforms affect finance—e.g., the relation of reserve and contingency funds; some such revision of the law was carried out for gas undertakings last May. There is mention, too, of superannuation arrangements, the power to furnish or purchase bulk supplies and the need of ensuring proper construction of reservoirs. This last point, which recalls the Dolgarrog disaster of 1925, seems to be dealt with by the Government's new Reservoirs (Safety Provisions) Bill. It is recommended also that Section 70 of the Public Health Act of 1875 should be extended; at present the local authority can ask a court to order the closing of a well, tank, or cistern if the water is likely to be used for human consumption and is so polluted as to be injurious to health; it is advocated that the local authority be enabled to act without waiting for actual pollution to occur.

Other proposed reforms appear equally sound and deserving of support. One difficulty ahead is the devising of machinery whereby the new uniformity may be substituted for the old variety in the multitude of enactments governing individual undertakings. Undertakers will naturally be reluctant to incur the expense of a new local Act to bring each concern's position into line. Not anticipating serious opposition to the necessary changes, the Subcommittee advocates giving the Minister of Health power to alter the law in particular cases by departmental order. There are ample precedents for such a method, but the vigilance of Lord HEWART may hinder their extension.

THE LIFE OF FOOD.

SCIENTIFIC inquiry is a species of human activity which may be initiated by a variety of motives. Its pursuit is found to be peculiarly satisfying to the increasing numbers of men who devote their main energies to it, and for such men the very fact that they are endeavouring to increase the sum total of human knowledge may be a sufficient reward for their labours. Other less detached individuals may be no less anxious to inquire into the truth concerning the mechanism of natural phenomena, but prefer, or are compelled by circumstances, to select for solution problems which have a more or less direct bearing on the every-day life of the community. There is no essential distinction between these two classes of investigators. The fundamental principles enunciated by the former are frequently applied to practical inventions which may influence profoundly the life of humanity at large, while the attempts to solve some practical question affecting the ordinary life of man may often lead to the discovery of basic principles which are primarily of academic value.

A good illustration of this thesis is to be found in the annual review of the work of the Food Investigation Board.[1] The work is avowedly utilitarian, and is concerned essentially with devising means of storing and transporting food, so that it shall reach the consumer in the best possible condition with the minimum risk of wastage. The practical results already obtained are of very considerable economic importance, but, in addition, conclusions have been reached in certain directions which may prove of considerable significance in the realms of pure animal and plant physiology. Among the subjects of current investigation are the changes undergone by meat during freezing, cold storage, and thawing; important practical recommendations have already followed the work accomplished in this field. In the course of this work it has been found that there is a zone of low temperature within which lactic acid can still be produced, although the machinery for its destruction has been destroyed, an observation which may have an important bearing on the physiology of muscle contraction. The current methods of handling fish on trawling vessels have been the subject of special inquiries, and it has been found that without increasing the running costs of the vessels it is possible to extend the time during which fish can be landed in a fresh condition from 6–7 up to 10–11 days. Most interesting, perhaps, are the observations on the storage of fruit. Not many years have passed

[1] Report of the Food Investigation Board for the Year 1928. London: H.M. Stationery Office. 1929. 3s. 6d. Copies may be obtained in America from the British Library of Information, French Buildings, 5, East Forty-fifth-street, New York.

since the purchase of fruit in this country during the winter and spring months was almost impossible. Now there is a plentiful supply of apples, oranges, and tomatoes, not to mention other varieties, all the year round. The prices are often high, it is true, but this is in part owing to wastage occurring during storing and handling. It has been one of the tasks of the Board to investigate the causes of this wastage, an inquiry which has involved a study of the fundamental biological processes that occur in fruit during the various stages of its career. The conception of an apple (for instance) as a living structure that is continually respiring and producing measurable quantities of heat has been borne in mind; it has been shown that the apple, after passing through the phase of immaturity, reaches a period which has been called the climacteric, during which there is a marked increase in the rate of respiration, and an alteration in the respiratory quotient which are apparently associated with the production of those chemical substances which confer upon the fruit its characteristic flavour and aroma. This period is followed sooner or later by senescence, which must terminate the useful life of the apple as far as consumption by man is concerned. It is obviously desirable that the factors which control the time of appearance of the climacteric and the subsequent length of the useful life of the fruit should be determined, and with this end in view a large amount of work has been carried out on the influence of the state of maturity at the time of picking, and the temperature, humidity, and composition of the surrounding atmosphere during storage.

This work has not yet been completed, and is being carried on side by side with other important investigations concerning the influence of various types of fungal invasion on the metabolic processes of the apple. It is clear that results of vital importance have already been obtained by such investigation, and we may confidently look forward to a time in the near future when our supplies of food will be improved in regard both to quality and variety, and one may well hope, lowered in price as the result of the activities of the Food Investigation Board.

THE NOBEL PRIZEMEN.

EVERYONE will be glad that a Nobel prize—at any rate, half of one—has been awarded to Prof. Sir FREDERICK GOWLAND HOPKINS, if only because it gives us an opportunity of expressing our affectionate admiration of what he has done, and what he has been, and is, in English biochemistry. His laboratory career has been spattered with the results of his peculiar flair for seeing where the explanations of things lie; the pigments of white butterflies and a method of estimating uric acid are in the early years, the efficacy of milk as a food and glutathione (very frankly qualified the other day) are more mature products. And in between he has been the activating inspiration of a great number of young people. Their experience we envy, and it is not surprising that they flock so abundantly to the "Museum Hoppianum" in Tennis Court-road in Cambridge. HOPKINS did not, of course, "discover" vitamins; it is very doubtful, indeed, whether anyone really "discovers" anything in the ordinary sense; they put links into a chain. But the link which HOPKINS put into the process of finding out about the fat-soluble vitamins was important, and it came just at the right time, and it is, we suppose, with this particular activity of his in mind that the Nobel electors have joined with him Prof. CHRISTIAAN EIJKMAN of Utrecht who, a quarter of a century ago, made quite clear the connexion of beri-beri with diet through his convincing experiments with whole and decorticated rice in relation to the polyneuritis of birds. EIJKMAN, too, has not been a man of one idea. He has had a long career of fruitful activity in bacteriology, has devised good practical methods of growing the colon bacillus, and has involved himself in the philosophy of the theory of disinfection. Though "vitamins" is the obvious word which occurs to one's mind on reading the announcement in the papers, it is well to reflect how the many-sidedness of both men has given substance and comprehensiveness to their specialised investigations. And perhaps some of those who work at vitamins now would make better progress if they were not so exclusive in their interests.

Annotations.

"Ne quid nimis."

PARTNERSHIP IN INDUSTRIAL HEALTH.

A BRIEF account appears in another column of a social meeting in connexion with the Industrial Health Education Society. At the luncheon given by Lord Melchett to a representative group of persons directly or indirectly interested in the objects of the Society the need for explaining in detail what had been done and what was being done did not arise because so many in the room were familiar with what might have been said. But it is probable that such knowledge is not at all general or shared by many of the medical profession, who may not know what is the actual work of the Industrial Health Education Society. This Society, first, is the only voluntary society concerned with occupational disease, and its work is directed towards securing one great object—namely, the information of industrial workers as to the diseases and disabilities to which they in their particular trade are liable, so that, at any rate during working hours, certain perils may be avoided. The instruction is given in the form of health talks by medical men and dental surgeons, and on the invitation of the workers themselves—that is to say, the subjects of the health talks are chosen by the workers and the occasions for them are determined by the workers, the meetings being organised in their own clubs and canteens. In this way the presence is secured of workers who certainly would not usually assist at lectures on health where general questions of hygiene, environment, nutrition, and welfare were to be discussed. Yet these are the men who are deeply interested in a practical way in the incidence of occupational disease and accidents, and through the medium of the Society they are asking for instruction along definite lines, and they obtain it as much from the results of the cross-examination to which they are urged to submit the lecturer as from any set delivery of his. The fact that the initiative comes from the workers is of great importance, for the knowledge that the employers are not at the back of the lecturer removes a suspicion which has had malign influence in the United States, where the scientific management associated with the name of Frederick W. Taylor came to be regarded as a new form of oppression under the eponym of "Taylorism." The statistics which have appeared in the United States from many quarters, illustrating the increased efficiency of operatives who are maintained during their work in good health, have been collated with equally interesting figures as to the increased output from factories where sanitary environment is provided. The result has been that the cynical feeling has often been expressed across the Atlantic that the interest shown by employers in the hygienic conditions of the workshop may have its inspiration

in a commercial intent to get more work out of the men. This is an avenue of distrust which the words used at Lord Melchett's luncheon by the host, by Sir William Milligan, and by Mr. Ben Tillett should close. While the physical suffering is borne by the workers, they share also in the evils associated with trade depressions. The education in the factors of physical amelioration will enable the workers to demand from the employers conditions valuable to both parties, while the employers will have to obtain the knowledge which is being placed at the disposal of the employed, so that they may deal fairly with such demands. Put briefly, the health of the industrial workers is not a matter for parties at all, but for partners.

CEREBRAL INFECTION FROM THE NASAL CAVITIES.

IN 1926 the Minister of Health appointed a committee to inquire into the improvements possible in the process of vaccination. The committee, having examined the evidence, reported that in their opinion some light might be thrown on the nature and origin of the nervous complications by a knowledge of the channels by which infection might pass from the nasal cavities to the brain. Prof. le Gros Clark was therefore asked to investigate this problem, and the results of his work have now been published [1] in a pamphlet. Reviewing previous experiments, he points out that the injection of coloured dyes into dead subjects may easily lead to fallacious results, but a connexion between the subarachnoid space and the nasal cavity along the perineural spaces of the olfactory nerve has been repeatedly established. After experimenting with carbon suspension and trypan-blue, he came to the conclusion that the best material was a solution of potassium ferrocyanide and iron ammonium citrate in equal parts, made up to a strength of 1 per cent. This solution is practically isotonic with the body fluids. It was dropped, by Dr. Mervyn Gordon's technique, into the nasal cavity of rabbits and after the death of the animal the tissues were placed in 10 per cent. formalin, with 5 per cent. hydrochloric acid to precipitate granules of Prussian blue. These granules are not diffusible in the preserved tissues after death. When the mucous membrane of the nasal septum was dehydrated, cleared in xylol-phenol or oil of wintergreen and mounted in balsam, the olfactory nerve bundles were found to be strikingly outlined by a deposit of granules along the nerve-sheaths, strewn around in the intercellular spaces of the perineural sheath. Occasionally a few granules were seen in the substance of the bundles among the nerve-fibres, and often the individual sheaths were linked up by intercommunicating strands of blue granules running in among the follicles of the serous glands and forming a sort of plexus. The granules seemed to lie in the connective tissue spaces rather than in endothelial tubes, while the plexus connected up here and there with larger vessels in which the endothelial lining was distinctly visible. Few granules were found in the submucosa of the respiratory part of the mucous membrane, although a deposit of blue might be found on the surface. The sections provided abundant evidence that the solution had been absorbed into the submucous tissues through the olfactory mucous membrane and that absorption could occur within one hour of dropping the solution up the nose.

The granules showed a marked tendency to infiltrate the periosteum and perichondrium covering the turbinate system, and in the region of the cribriform plate there was convincing proof that they entered the cranial cavity. The subarachnoid space becomes continuous through the cribriform openings with the delicate trabecular sheaths of the olfactory nerves, and it was principally along this path—though also partly along the small blood-vessels and by extension along the periosteum—that granules made their way into the skull. The great absorptive property of the olfactory mucous membrane (contrasted with the poor permeability of the respiratory portion which absorbed very small amounts) is probably connected with the sense of smell. From the disposition of the granules it was reasonable to postulate a continuous stream of absorbed fluid passing centripetally along the nerve-fibres from the epithelium to the brain; a current must normally run in this direction. The absorbed solution is partly drained away by the ordinary lymphatic channels, but no evidence was obtained of a communication between the perineural sheath spaces and the lymphatics, or between the subarachnoid space and the nasal lymphatics. There was abundant evidence that the solution was absorbed into the blood capillaries and in a few cases conveyed by minute vessels through the cribriform plate; these vessels theoretically provide a route for pyogenic and thrombotic infections but cannot otherwise play a very important part in disease. Material can also pass to a certain extent into the cranial cavity, though not, of course, into the subarachnoid space, by penetrating the periosteum or perichondrium or passing through the bone of the ethmoid. Infection might thus spread to the extradural spaces. Goodpasture has suggested that the herpetic virus may reach the central nervous system via the axis cylinders of the olfactory nerves. This would depend probably on a peculiar affinity between a specific virus and the physico-chemical nature of the neurone, and was not considered susceptible to anatomical investigation.

While these experiments relate to rabbits, there is one case on record which suggests their applicability to human beings. A man suffering from epistaxis had his nose plugged with a tampon soaked in perchloride of iron. He died a few days later from meningitis, and at autopsy his olfactory bulbs were found to contain iron. The investigations provide an unimpeachable anatomical basis for the theory that certain droplet infections reaching the body through the nasal cavities can obtain direct and rapid access to the subarachnoid space. The brain has usually been regarded as a closed system, marvellously protected from the outer world. The news that fine granules can reach it, by a direct route, within an hour of their impact on the outside of the body offers a wide field for speculation.

[1] Reports on Public Health and Medical Subjects, No. 54. H.M. Stationery Office. 1929. Pp. 27. 1s.

HEALTH OF THE R.A.F.

IN his latest report[1] on the Health of the Royal Air Force, Air Vice-Marshal David Munro, the Director of Medical Services, is able to give a satisfactory account of the year 1928, and says that 88 per cent. of the officers called upon to fly were found fit for all flying duties. The average strength of the Force was 30,470 men and the admissions to hospital or sick quarters fell to 430·1 per 1000 (467·8 last year) with a considerable reduction in those for "sandfly, malaria, and influenza." Flying units have relatively fewer cases of disease, but of course, far more injuries than the others. Deaths from disease numbered 40 including 5 each from tubercle and enteric. As a result of injury there were 97, of which 65 (an increase of 13) were by flying casualties on duty. The relation of such casualties to the total hours flown is not mentioned this year. The chief causes of invaliding were psychoneurosis (28) and tubercle (22). A joint committee of the three Services has studied the incidence of tubercle, and a new table appears, showing that in the R.A.F. there was a relatively high incidence of tubercle before 25 and after 45 years of age, and between five and nine years' service. The prevalence of venereal disease slightly increased at home. Diphtheria cases were fewer; it is not stated whether this has any relation to the testing and immunisation of last year. Two kinds of influenza vaccine were tried among a total of 969 men; in both

[1] Report on Health of Royal Air Force during 1928. H.M. Stationery Office. 1929. 4s.

groups a third were later attacked by influenza, while in a control group of 1041 men the incidence was much the same. Dysentery on all stations abroad is mostly bacillary. Malaria has been reduced by a half during the year and for this reduction mosquito-proofing of barracks is given most thanks though Paris green is also mentioned. An interesting account is given of the difficulties of a force on active service in Iraq. In peace-time the great trouble in that country is to find amusement for the men in the evening to protect them from malaria and other diseases. Great attention is paid to hygiene in the training of the Force, and the orderlies, being themselves craftsmen, like all in the R.A.F., spend much of their spare time in making instructional models. Wounded and sick are now carried by air in service types of aircraft, not in flying ambulances, and this is found to be both comfortable and economical.

This report appears 11 months after the one for 1927.

BLOOD-GROUPS IN PUERPERAL AND NEONATAL DISORDERS.

THE blood of mother and fœtus may differ from one another in group constitution, and from time to time it has been suggested that an incompatibility in respect of iso-agglutinins and agglutinogens has some bearing upon disorders of the puerperium and of the first few days of life. In a series of 152 observations on mothers and their newly-born children, E. Bansillon,[1] of Lyons, found 36 cases in which the red cells of the child were agglutinated by the serum of the mother. In 20 (about 55 per cent.) of these the pregnancy had been characterised by severe vomiting beyond the third month, albuminuria, headache, and other so-called eclamptic symptoms. In a parallel series of 121 cases in which the maternal serum was incapable of agglutinating the fœtal red cells these symptoms only appeared in 16 (about 13 per cent.), though in one of them the symptoms were "graves avec eclampsisme." The converse case of agglutination of the maternal red cells by the fœtal serum was investigated with special reference to its possible relation to icterus neonatorum. In a series of 155 observations, 22 cases were found in which the fœtal serum was capable of agglutinating the maternal red cells. In 15 (or nearly 69 per cent.) of these the child showed marked jaundice during the first three days of life. Among 133 children whose serum was incapable of agglutinating the maternal red cells, icterus showed itself in only 10 (about 7 per cent.). Despite his suggestive findings, Bansillon remains sceptical about the possibility of a relationship between "eclampsisme" and incompatibility of maternal and fœtal blood. But at any rate he seems to have made out a case for further inquiry into the possible relationship between icterus neonatorum and agglutinability of the maternal red cells by the fœtal serum.

[1] Jour. de Méd. de Lyon, Oct. 5th, 1929, p. 637.

RECONSTRUCTION OF THE ROYAL VETERINARY COLLEGE.

THE importance to the State in an agricultural country of an efficient veterinary service is so obvious that it is not surprising that the Royal Veterinary College, four years after its foundation in 1791, became the recipient of a grant from Parliament of £1500 yearly. What is far more remarkable is the fact that after the year 1815 the grant was withdrawn, and that since then the College has been maintained only by donations and the relatively small sums represented by the fees of the students. The Development Fund gave a sum a few years ago for the erection of a Research Institute, and annual grants have been received from the Ministry of Agriculture and Fisheries for the maintenance of this department; but the school itself has meanwhile fallen into so serious a state of dilapidation that it is in danger of closure from lack of funds. It is scarcely a reasonable policy to encourage research while so vigorously discouraging the coming generation of research workers. Some of the educational buildings have already been condemned as unsafe, while the annual expenditure on repairs is a formidable drain on the straitened resources of the College. In the appeal for funds made three years ago by the Royal Veterinary College it was noted that in France and Germany the maintenance grants for the veterinary colleges in a single year before the war exceeded the total amount given by successive governments for veterinary education in England and Wales during the last 100 years.

In a recent report[1] on the Reconstruction of the Royal Veterinary College the Departmental Committee of the Ministry of Agriculture and Fisheries comment on the unselfish work, under deplorable conditions, of the members of the teaching staff and advises complete reconstruction and reorganisation as the only means of ensuring the continued existence of the College. The report deals comprehensively with the factors to be considered in the construction of the proposed new college, with special attention to site, accommodation, curriculum, staff, and government. The present buildings at Camden Town suffer from constriction and noise of traffic, but have the advantages of a central position and proximity to Islington Cattle Market, University College, and the London School of Tropical Hygiene. A town site, the committee consider, is preferable to a site in the country, since larger numbers of cases pass through the College for treatment, and though these are mainly cats and dogs and horses the experience of students in the treatment of farm animals can be supplemented by residence with practising veterinary surgeons and farmers during the vacation. It is doubtful whether a country site would command a greater number of farm animals than may be brought to a town clinic by motor ambulance, while a decrease in the numbers of small domestic animals would be inevitable. Familiarity with large numbers of sick animals is essential to the student, and can clearly be best obtained in towns. Another advantage of the present site lies in the fact that the College will probably become affiliated to the University of London, when the opportunities for recreation and social intercourse among the students would be much increased. It is proposed to provide for an annual entry of 75 students, including women, who were only admitted to the College in 1927—with total accommodation for 250; and to offer a four-year course, as at present, in preparation for the Diploma of the Royal College of Veterinary Surgeons. The report emphasises the desirability of a close connexion between the educational and the research departments of the institute, and the architectural construction of the new buildings would be designed to encourage this. A considerable increase in the staff is strongly advised with corresponding additions to equipment and maintenance; the new buildings are intended to provide ample laboratory and class-room accommodation with space for wards, operating theatres, and X ray apparatus. The estimated approximate cost of the new building, including equipment, is £280,000—or £300,000 if the freehold of the present site and certain neighbouring land can be obtained. The cost of maintaining the new College is estimated at £21,000 per annum, and an increase in the grant to the Research Institute from £5000 to £25,000 per annum is advised, with a view to providing a field station near London for experimental work on larger animals.

The response to the appeal for funds made by the governing body during the last three years has been disappointing, only £30,000 having been collected, and though the Treasury have sanctioned a grant of a sum not exceeding £35,000 for erecting new buildings, this grant is subject to the condition that the governors must provide an equal sum for every £1 received.

[1] London: H.M. Stationery Office. 1929. Pp. 26. 1s. 3d.

Even so the funds at present fall lamentably short of the advised outlay. Those who have had the opportunity of inspecting the magnificent veterinary institutes subsidised by the State in other parts of the Empire—for example, that organised at Onderstepoort, Pretoria, by Sir Arnold Theiler—will support the demand for an adequately equipped and staffed College in this country, where the lack of proper facilities for training reacts on the status of the veterinary surgeon.

AN ENGINEER ON INDIAN SANITATION.

IN tropical countries especially medicine has frequently to call in the aid of the engineer, and the views of an Indian sanitary engineer of outstanding experience are, therefore, of considerable interest to all medical men who practise in warm climates. Mr. G. Bransby Williams, formerly chief engineer of the Public Health Department of Bengal, has on two occasions addressed the Rotary Club of Calcutta on the subject of public health in India, and his last address, delivered in June of this year, contains a great deal to provoke thought. It is not difficult, in most parts of India, to produce vital statistics, which, from a European standpoint, are appalling, and Calcutta maintains an unenviable lead in this respect. The advantages of improved hygienic conditions may be worked out in terms of rupees, as well as of physical and moral advancement; this has been frequently done, and we need not elaborate that side of Mr. Williams's address, but other aspects are worthy of study. He begins by referring to the stupid as well as rather brutal attitude of a certain type of pseudo-philosopher, who turns down attempts at social and hygienic betterment, with the argument that to interfere in these matters is to disturb the balance of nature, and that as India is over-populated, it is unwise to take steps to lower the death-rate. It may be true, as David Harum held, that a moderate amount of fleas are good for a dog, inasmuch as they keep him from brooding over being a dog, but a laissez-faire attitude should not prevent us from trying to envisage an India which is not only more healthy, but better fed, better housed, better educated, and more generally prosperous than at present.

Mr. Williams tilts against official inertia in sanitary matters. He points out that the expenditure on water-supply, antimalarial measures, and public health generally in India is ridiculously small, and he adduces instances of gross neglect by responsible official bodies. The drainage outfall of Calcutta, it appears, is being allowed gradually to silt up, without any serious effort being made to keep it open. The neighbouring town of Howrah, with 200,000 inhabitants, has been permitted to develop on village lines, with no proper sanitation at all. Calcutta itself is growing increasingly unhealthy, as shown by the mortality figures, and it is to be feared that the same is true of some other large centres. On these and similar grounds Mr. Williams comes to his main thesis, which is that, as regards any serious improvement in the health of the inhabitants, the results of the British administration have been to a great extent a failure, no advance having been made comparable to that in Great Britain and other western countries. The fault, he admits, lies largely with local authorities, and unless a new atmosphere can be created, he believes that conditions are likely to get worse than better, with a further broadening of popular control. As a start he advocates the institution of large-scale experiments by public health and engineering authorities in specially insanitary areas, with a view to prophylaxis of disease.

There is, of course, another side to the picture which Mr. Williams draws. Small-pox has been definitely controlled, cholera has been checked in many of its worst manifestations, and the resources of modern science have been made available for anyone who has the initiative to use them in regard to malaria, tuberculosis, kala-azar, diphtheria, and other diseases. The path to general sanitary improvement has been indicated, and the influence of the British administration has always been exerted in favour of medical and public health reforms. More advanced communities, such as the Parsis of Bombay, have availed themselves largely of the opportunities provided, with immense profit to their section of the population. Large scale demonstrations of modern sanitation do exist in cantonments and the larger urban centres, and in some rural districts in the form of tea and rubber plantations, many of which are models of sanitary, as well as industrial, organisation. Such examples might with advantage be multiplied many times over, but the root of the whole question is, of course, education, not merely school and university education, but simple instruction in the homes of the people, and more particularly in the quarters of the women. In Gurgaon Mr. Brayne has shown what can be done by appropriate propaganda. "When you lose your way in Gurgaon district you find your way by your nose. The greater the stink the nearer the village. Even the animals clean their young, and do not foul their nests by insanitary habits. Why are Gurgaon villagers worse than animals?" By means of such simple home-truths has the deputy commissioner of Gurgaon appealed to his flock, who have shown themselves not devoid of humorous appreciation, and have responded in practical fashion.

A LABORATORY TEST FOR SMALL-POX.

DIAGNOSIS of the mild small-pox prevalent in this country is sometimes difficult, especially at the beginning of an epidemic when there have been no previous cases to make the practitioner suspicious. A laboratory test of proved diagnostic worth would be very useful in the diagnosis of atypical cases and therefore of great help in the control of epidemics.

In 1925 M. H. Gordon demonstrated that the virus of small-pox gave both specific complement fixation and flocculation with an antivariola serum. His evidence was convincing and its practical application is now forthcoming in a report[1] by Dr. W. L. Burgess, Dr. James Craigie, and Prof. W. J. Tulloch on the application of the flocculation test to the diagnosis of small-pox. The reaction is carried out with a suspension of the crusts from a suspected case and a specific flocculating serum prepared in the rabbit. The material was obtained from 93 cases coming from three different localities, Dundee, Arbroath, and South Shields. Fifty-three of these were cases of small-pox, which with one exception were of the mild type, and many of them presented considerable difficulty in clinical diagnosis. The remaining 40 constituted the control material and consisted of 11 cases of vaccinia (bovine 4, rabbit 5, human 2), 27 cases of chicken-pox, 1 case of impetigo, and 1 of septic rash. The results of the flocculation test were correlated with the clinical and epidemiological evidence, and the authors of the report conclude that the reaction is specific and of diagnostic value. In this they seem to be entirely justified and they are to be congratulated on an eminently satisfactory piece of work. But the importance of this investigation is not only a practical one, for it throws light on the mechanism of the immunity reactions of filtrable viruses. From his work with the viruses of vaccinia and variola Gordon claims that the immune reactions of bacteria and filtrable viruses are fundamentally the same and in this he does not stand alone. His position has been assailed, however, by certain investigators—notably Schultz and his co-workers in the United States and C. H. Andrewes in this country. Schultz and his colleagues fail to find any specificity in the complement-fixation and agglutination reactions obtained with viruses and their antisera, and they think that these reactions are attributable to contaminating bacteria present in the virus suspensions. Burgess, Craigie, and Tulloch have done control experiments with sera prepared against the bacteria found as contaminants

[1] Diagnostic Value of the "Vaccinia Variola" Flocculation Test. Medical Research Council Special Report Series, No. 143

in their virus material and their results do not support Schultz's contention.

This report is a valuable contribution to the literature of filtrable viruses and, as the Medical Research Council points out in the preface, it demonstrates the value of investigations carried out in the field by a medical officer of health in close coöperation with laboratory workers.

THE PREPARATION OF CATGUT.

CATGUT, to the preparation of which for surgical use the Medical Research Council have devoted a special report,[1] was certainly used by Galen for sutures, and, during the Middle Ages, by a number of surgeons; but it was not until the 'sixties of last century, when antiseptic surgery was devised by Lister, that it became an important material in surgical practice. It was then recognised that the elastic layer of the small intestine of sheep (for cat denotes not the source of the gut but the use to which it was first put, if it derives from an old word for fiddle) possessed many of the qualities which are desired for ligatures and sutures. First of these is a tensile strength commensurate with its gauge, a measure of elasticity, and the retention of these qualities for a long time. Its absorbability has a value which varies with the purpose to which it is put. Its great drawback is the difficulty of rendering it sterile, many of the methods which have been invented for the purpose having proved ineffective. From its place of origin catgut is obviously apt to be contaminated with many germs, some of which may be harmless while others may lead to serious infection. It is clear from the report that the large majority of the methods hitherto employed do not produce an absolutely aseptic gut, whether the test is made for germs naturally present in the gut or for specially virulent organisms introduced by intention. Nevertheless, it is a fact that surgeons have been able nearly always to obtain perfect results without any wound infection by the use of these methods, the tissues being capable of dealing effectively with a slight degree of infection, just as in pre-antiseptic days suppuration did not necessarily follow operation, even when unsterilised ligatures and sutures were buried. But at the present time no surgeon should be satisfied with suture material which can possibly contain living germs. The earliest attempt to destroy the organisms completely was made by Lister, who steeped catgut for some hours in a solution of carbolic acid, with perfect results from the surgical point of view; later he employed a mixture of dilute carbolic acid and olive oil; mercuric salts were soon substituted, and it will be news to many to learn that of these the biniodide is decidedly less powerful than the perchloride. Chromic acid was next tried, then various compounds of silver, turpentine, sundry essential oils, and other substances. Finally came iodine, which in one form or another has received the greatest measure of support. With nearly all these substances the test of efficiency was clinical; one and all produced a catgut which, in the great majority of operations, allowed the wound to heal without suppuration or any other sign of infection. The bacteriologist can, however, find infective germs in the gut every time. An essential difficulty in examining the claims of a particular antiseptic resides in the fact that, before the test can be applied, every trace of the chemical must be removed from the gut, for otherwise it may inhibit the growth of some germ which is actually present. No amount of washing with water will effect this, a point in which many investigators have failed. After an exhaustive survey the authors of the report give their adherence to iodine as a sterilising agent, combined with meticulous care at every stage of the process, from the earliest. If immersed for nine days in a solution of iodine of suitable strength at an early stage of preparation, catgut will absorb 12 per cent. of its own weight of oidine. If the iodine is in excess the gut becomes brittle, and it is necessary to remove some of it from the ligature after it has been sterilised. Flexibility is enhanced by adding glycerin to the iodine solution. All who prepare catgut ligatures and all who use them will need to pay attention to the conclusions reached in the report.

[1] See THE LANCET, Nov. 2nd, p. 946.

THE ADMINISTRATION OF NATIONAL RADIUM.

THE Radium Commission has decided, for the present, to recognise as national radium centres only such places as possess medical schools with complete clinical courses and the necessary facilities for instructing students and post-graduates in the principles and practice of radium therapy. In the view of the Commission, the need for more trained and qualified workers in the use of radium is even more urgent than the supply of radium itself. The Commission has further decided to initiate all negotiations for the constitution and equipment of national radium centres through the medical faculties of the local Universities concerned, and this procedure is now being followed. When the claims and requirements of these centres have been considered and assessed by the Commission, the allocation of national radium will be commenced. About 3 g. should be available for distribution, on loan, by the end of this year, and another 7 g. before the autumn of 1930. It is estimated by the Commission that practically all the radium which can be purchased by the Trust with the funds already subscribed will be required for the equipment of the national radium centres, and it is regarded as unlikely that any of this national radium will be available for allocation to other hospitals or institutions.

The radium for the "4-g. bomb" has been received from Belgium, measured and tested by the National Physical Laboratory, and handed over to the authorities of Westminster Hospital, where it has been installed. If, after three months, the radium is purchased, it will be entrusted for a further period of three years (at a rental of £410 per annum) to this hospital, which will maintain a continuous day and night service with the bomb, in the pursuit of certain clinical objectives prescribed by the Commission. A radon plant is to be installed at the National Physical Laboratory for the purpose of supplying radium emanation to institutions which otherwise could receive no direct assistance from the Commission in connexion with radium therapy. Questionaires relating to this service are being framed.

TUFFIER.

THE death in Paris last week of Sir Théodore Tuffier at the age of 72 years has removed from us one who upheld a great surgical tradition and who has been described in the *Siècle Médical* as worthy of the title "A Prince of Science." Tuffier had been for more than 40 years surgeon to Paris hospitals, but his name and fame were attached especially to the Hôpital Beaujon and the Hôpital de la Cité du Midi. There was hardly a province of surgery in which he did not do pioneer work; the development of spinal anæsthesia was perhaps the major interest of his life, with the surgery of the lung coming scarcely second. His published works on renal tuberculosis, on uterine fibroids, and on the treatment of inoperable cancer commanded general attention. He was a great traveller and was familiar at first hand with surgical practice all over the world. Conversely his own surgical clinic at the Cité became a centre of attraction for surgeons of all nationalities. Early in the Great War Tuffier was brought into intimate relations with the surgeons of the British Expeditionary Force, of which we have personal testimony from Sir George Makins, who was senior consulting surgeon to the Force. When at the suggestion of Mr. Lloyd George the Conférence Interalliée was instituted to discuss the methods of surgical treatment in favour amongst surgeons of the allied

armies, it was arranged that the meetings should take place in Paris, and Tuffier was elected president. Into the organisation of these meetings he entered with great enthusiasm and he made an effort to keep the work alive between the official meetings by monthly gatherings at his own house. There can be no doubt, Sir George Makins, writes, that these discussions had an important influence not only on the diffusion of experience gained in the different armies, but also on methods of treatment, hospital organisation, and the transport of patients. Tuffier himself was so impressed by the value of these international meetings that he made efforts to continue similar conferences after the war, and in fact the fifth of such meetings was held in London this year. Tuffier was an early and ardent adherent of the method of treatment of wounds devised by Carrel and Dakin, and speedily introduced it into the French hospitals. Always eager to adopt new ideas, he was the first surgeon to transport a patient by aeroplane, and thus brought a man wounded in the chest over the lines of the enemy to a base hospital in North Africa. A man of great personal charm, of high culture, a good linguist and conversationalist, Tuffier was also most hospitable. Many British surgeons in Paris during 1914–18 remember with pleasure visits to his home, where he had accumulated a wonderful collection of pictures and objects of vertu of all kinds. For over 25 years Tuffier was associated with the work of the Hertford British Hospital in Paris, first as surgeon and later as chairman of committee. The British Government recognised his services uring the war by creating him a Knight of the British Empire and a Companion of the Bath. His eminence as a surgeon had already been recognised by his colleagues by his election in 1913 as an honorary Fellow of the Royal College of Surgeons of England.

MEDICAL TREATMENT OF EXOPHTHALMIC GOITRE.

OF late years a mass of reports on the successful use of surgery in long series of cases of exophthalmic goitre has overshadowed other methods of dealing with this disease. But operative treatment, although it produces a certain benefit in a certain time, is admitted to be unsound at bottom, and we turn with interest to an account of the end-results of medical measures in 2000 cases studied during a period of 19 years, and now described by Israel Bram.[1] In this series care was taken to differentiate between, on the one hand, toxic adenoma with secondary Graves's disease, which was treated surgically, and, on the other, true Graves's disease, which was treated medically. The medical treatment was on the following lines. Rest was deemed important, but unless there were serious cardiac lesions the patient was allowed to get up for three hours in the morning and also in the afternoon. Special attention was paid to home environment, and when harmony was lacking sanatorium treatment was given. A properly equipped sanatorium, at a moderate altitude, where dietetic, sociological, psychological, and medical supervision can be suited to individual needs is next best, says Bram, to a congenial home. The diet was ample—about twice as much as for normal people—but low in animal protein. Drug treatment was mainly symptomatic; quinine salts, ovarian products, suprarenal cortex, and mild sedatives were found useful, whilst care was taken to avoid the use of thyroid extract, the opiates, iodides, and digitalis. Psychotherapy was regarded as a vital part of the treatment, and every effort was made to clear up conflicts of internal or external origin. The patients were discharged from active treatment in from 2 to 18 months, the average for all cases being 8 months. Those who were able to relax properly made much more rapid recovery than those who were weighed down with household or other duties. In 20 per cent. of the series surgical treatment had been resorted to months or years previously. Some of these had derived temporary benefit from partial thyroidectomy and others had not improved. It was found (contrary to general opinion) that post-operative cases with myxœdema tolerated thyroid extract almost as badly as those without any such signs of insufficiency, the only effect of the thyroid extract being to cause a flare-up of the still persisting symptoms of Graves's disease. The cases were followed for from three to ten years, and in recording the results the verdict of complete recovery was accorded to patients whose pulse-rate, basal metabolic rate, and weight were normal, who had no tremor, no exophthalmos, and no enlargement of the thyroid, and who had a feeling of perfect well-being and a normal endurance for social and economic purposes. It is stated that according to these criteria recovery took place in 91 per cent. of the 2000 cases, whilst 3 per cent. were completely cured but for slight persistence of the exophthalmos, 3 per cent. had residual enlargement of the heart without subjective symptoms, and 3 per cent. had signs of myxœdema with or without cardiac enlargement. The latter were cases in which thyroidectomy had been done months or years before regular medical treatment was started. Recurrence of the disease months or years after the patient was considered cured was unknown in the series, and Bram thinks that with treatment on these lines a patient "instructed in the art of relative simplicity of mental and physical existence" is unlikely to develop the disease again in later life. He holds that the main cause of failure in medical treatment is insufficient study of the individual as a whole, and the spirit of haste in which medical treatment is only too often carried out.

[1] Med. Jour. and Record, Sept. 4th, 1929, p. 248.

OUR MEDICAL LAUREATE.

Dr. Bridges, having appealed, in the words of Virgil, for the support of his adored Muses, testifies in this earnest difficult poem[1] to a life-long love of beauty, seeing that with the world's attainment of accumulated knowledge new orders of beauty arise; but a devotion to Greek culture compels him to regret that man's faculties have not developed in a comparable manner, so that there is "now no higher intellect to brighten the world than little Hellas own'd." The poet's deep religious feeling, however, and, wittingly or unwittingly, the humanism pertaining to his profession, lead him to point out the limitations to the Greek ideals. From this introduction the poet, in a second book, goes on to review the war history of the world, finding it an expression of the "Autarchy of Selfhood . . . by Reason denounced"; while in a third book he considers Breed, the second and "younger of the two arch-instincts of man's nature." Here medical knowledge is freely used in thought and word, and a similar ability to employ correctly the vocabulary and reasoning of the physiologist and the psychologist will be found in Ethick, the closing book.

We have here a religious appeal written in austere and beautiful language, with an effective disregard for the rules which used to govern the making of Alexandrines. Perhaps prosody as much as poetry lies without our proper sphere of criticism, but upon orthography we may express opinion. The approach to a simplified spelling employed by the poet in his text does not follow a logical pattern.

THE next session of the General Medical Council will begin at 2 P.M. on Tuesday, Nov. 26th, when Sir Donald MacAlister, the President, will take the chair and give an address.

THE Lloyd Roberts memorial lecture will be delivered at the Royal College of Physicians of London at 5 P.M. on Thursday next, Nov. 14th, by Mr. H. A. L. Fisher. The subject is An Oxford Movement.

[1] The Testament of Beauty. By Robert Bridges. Oxford The Clarendon Press. 1929. Pp. 192. 7*s*. 6*d*.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LI.

THE INTERPRETATION OF TESTS OF STERILITY AND FERTILITY IN THE MALE.

UNTIL recently the only test to which the male has been subjected in cases of childlessness in marriage has been the examination of the semen for the presence of living spermatozoa. If these were found in what appeared to be reasonable numbers the result was considered satisfactory, and on the female partner in the marriage was placed the responsibility for the absence of children. But of recent years this method of dividing males into two classes of sterile and fertile has been found to be insufficient. It has been realised that a failure to conceive may be the result of a relative as opposed to an absolute sterility on the part of one or both of the partners in marriage. Even a minor degree of impairment of fertility in the male may, if he be united with an unfertile partner, become of supreme importance. Childlessness is, in fact, the result of the sum of the impaired fertility of husband and wife. This being so, a report on the husband should, if possible, furnish information as to his relative fertility, as well as the mere statement whether the semen contains active spermatozoa or not.

Examination of a Condom Specimen of Semen.

The quantity of semen emitted at a single coitus varies in different individuals, and at different times, and oligospermia is only of importance if of marked degree, and if it is known that a week's abstinence has been observed prior to the taking of the specimen. Oligospermia is physiological in old age. In a younger man it suggests suppression of prostatic secretion, and indicates the necessity for a careful examination of that organ. If in addition to oligospermia pus cells are found in the semen, an old-standing chronic prostatitis is a possible explanation. Finally, it should be borne in mind that the wearing of a rubber sheath may interfere with coitus in a nervous male and be responsible for the scanty emission. For this reason two or three specimens should be examined before oligospermia is reported.

Hæmospermia.

Hæmospermia suggests the presence of a chronic inflammation or congestion somewhere in the seminal tract, and more especially in the vesicles. It has also been found in cases of prostatic enlargement and in association with certain blood diseases, such as scurvy. If the blood is uniformly mixed with the semen, the vesicles are more likely to be implicated; if less completely mixed, the posterior urethra. In many cases of hæmospermia no lesion of the genital tract can be found, even after a searching examination.

Pyospermia.

The presence of pus points to an infection of the seminal tract. The same deductions may be made from the mixing of the pus in the semen as in the case of blood. In the presence of pus spermatozoa commonly lose their mobility and die. But the action of pus on the spermatozoa is very variable, and sometimes pus is found in the semen of fertile men. It is indeed probable that it is not the pus itself which is harmful, but that the pus is evidence of an inflammation which renders the secretions unfavourable to the life of the spermatozoa.

Necrozoöspermia.

The length of time that spermatozoa remain active and living after emission is affected by numerous factors. Some of these depend on the nature of the secretions surrounding the spermatozoa and some on the care taken to maintain the specimen at a uniform body temperature. The duration of life after emission may, however, be taken as a measure of the vitality of the spermatozoa. It can be studied by putting a drop on a slide under the microscope without any attempt being made to keep it warm, or else by placing the whole specimen in an incubator at body temperature and examining a drop from time to time. The presence of various types of deformed spermatozoa in a specimen is usually indicative of a hostile prostatic or vesicular fluid. If only dead spermatozoa are found at the first examination a fresher specimen should be obtained in order to discover whether the spermatozoa are dead at the time of ejaculation or whether they have died rapidly on account of unfavourable surroundings. The presence of blood, pus, and especially of micro-organisms in the semen, often explains a poor viability, especially if its reaction is found to be acid. In any case, necrozoöspermia is an indication for the need of a careful overhauling of the seminal tract for signs of inflammation.

Oligozoöspermia.

It is in richness in spermatozoa that the greatest number of variations are found when different specimens of semen are examined. Up till recently only large deviations from what was roughly considered the normal have been considered. Recently, however, Drs. Donald Comber and Morris Sanders have devised a method of spermatozoa counts, which expresses numerically the relative fertility of the male. These observers found that the average count in a healthy male is 100,000,000 spermatozoa per cubic centimetre. This figure remains fairly constant for the same individual at different emissions. It is diminished after sexual excesses or as the result of severe illness. It is lower in elderly men than in those still in their physical prime. As a general rule it is higher in those with large, well-developed testes than in those with small testes.

Anything that interferes with the formation of spermatozoa, or with their passage into the urethra, may produce an oligozoöspermia. The discovery of a low count in a young man should lead to a very careful examination, not only of the genital tract, but of the body as a whole. The testis is extraordinarily sensitive to changes elsewhere in the body, and treatment of any abnormality, be it a glandular defect or a septic focus, may have as a result an improvement in the spermatozoa count. The importance of oligozoöspermia as a factor in childlessness may be gauged by the fact that in only four of the 294 cases examined by the above quoted investigators did conception occur when the count was under 60,000,000.

Azoöspermia, or the complete absence of spermatozoa in the semen, may be explained either by a complete aspermatogenesis or else by a failure on the part of the spermatozoa to reach the urethra. The crucial test by means of which these two conditions may be distinguished is puncture of the testes and examination of the aspirated testicular fluid. This may be done under local anæsthesia. If no spermatozoa are found in the testicular fluid a search should be made for some constitutional defect, special attention being paid to the endocrine glands. If spermatozoa are found, the obstacle to their egress must be located by posterior urethroscopy and tests of patency of the ejaculatory ducts. This may be conveniently done by injecting a dye such as methylene-blue into the vasa at the neck of the scrotum and noting whether it appears in the urethra.

Statistics show that gonorrhœa is generally responsible for these cases of azoöspermia due to obstruction. Especially is this likely to follow bilateral epididymitis, as is shown by H. Benzer's observations on the after-history of German soldiers who had suffered from gonorrhœa and had been married for three or more years. He found that of those who had previously had unilateral epididymitis

23·4 per cent. were childless, and of those who had had bilateral trouble 41·7 per cent. In view of this risk of sterility it would be wise for all men who have suffered from bilateral epididymitis to submit a specimen of semen for examination before marriage. An azoöspermia of this nature is more likely than not to be incurable and a woman who marries a man in the hope that she may have children and discovers later that she can never be a mother may well have grounds for complaint if her husband, knowing the risk of sterility, has never submitted himself to examination. The same precautions should be advised where there is a history of epididymitis from other causes than gonorrhœa, or of orchitis following mumps.

General Consideration.

It must be remembered that in the case of the childless marriage multiple causes are the rule rather than the exception. The examination of the semen, therefore, although it is of great assistance in assessing the fertility of the male, is not the sole test to which he should be subjected. Constitutional factors that depress his fertility must be sought for. According to S. R. Meaken, the incidence of these constitutional faults is even greater in the male than than it is in the case of the female. Any examination, therefore, which helps us to assess the general physical health of a husband, for example a Wassermann, may be regarded as a test of fertility, although in this article only the examination of the semen has been considered.

KENNETH WALKER, F.R.C.S.,
Genito-urinary Surgeon to the Royal Northern Hospital and St. Paul's Hospital.

Special Articles.

REPORT ON AN OUTBREAK OF SICKNESS DUE TO CONTAMINATED MILK.

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THE outbreak occurred in the Roundhay and Moortown districts of Leeds on Sept. 30th last. There were involved 83 children, all of whom were under ten years of age. Of those affected, 78 were pupils at two elementary schools, A and B, in the city. The remaining 5 cases were children under school age of private families in receipt of milk from the same source as the two schools in question. The schools concerned, in common with the other Leeds elementary schools, receive a daily supply of milk in accordance with the scheme recently adopted by the Leeds Education Committee, which scheme commenced to operate on Sept. 9th last. Under the scheme, milk is provided to the schools by various purveyors according to district, and at the present time some 7000 gallons per diem are supplied in this way. One of the affected schools (A) receives 3 gallons, and the other (B) 1½ gallons per day. The milk is delivered to the schools each morning in capped bottles of one-third of a pint capacity, and straws are provided. The modus operandi is that the straw is thrust through a central thin portion of the cap and the milk is drunk through the straw. The milk supplied is non-graded and unpasteurised. The bulk quantity required under the scheme is such that much of the milk has perforce to be brought from without the city.

Source of Production.

At the time of the outbreak the affected schools were supplied with milk by a duly registered retail purveyor X, whose premises are situate within the city. The source of production was a farm outside the Leeds boundary occupied by Y. The milk was brought in churns from farm to dairy, bottled at the latter place, and finally delivered at the schools between 9 A.M. and 10 A.M. X had supplied the two schools in question (no others) since Sept. 16th, but it is to be noted that the day of the outbreak, the 30th, was the first on which milk from Y's farm was delivered at the schools. Prior to Sept. 29th, X had obtained his milk elsewhere, and there had been no untoward incident. On the 29th X obtained his first supply from Y. The day being Sunday, and the schools closed, the milk was delivered loose to private customers only. On Monday morning, before the school outbreak occurred, X learned that three young children on his round had the previous day suffered sickness which their parents attributed to the milk. The same day X delivered milk in bottles to the schools and loose to his private customers. There followed the school outbreak, and at least two cases of sickness in children on his private round.

On Sept. 30th at (A) school, 77 children partook of the milk; of these, as far as could be ascertained, 71 were affected, of whom it is certain 55 suffered severe vomiting. Six only of those who had taken milk were quite unaffected. None of the children who had not taken the milk was affected. At (B) school 39 children drank milk, 7 of whom suffered subsequent vomiting. At this school it was not possible to ascertain the number of children who drank milk and suffered consequent indisposition other than vomiting. Again there was no sickness among those who had not partaken of milk.

Characters of the Illness.

In both schools the milk was consumed at 11 A.M., and in the large majority of cases the sickness commenced about 1.30 P.M. Persistent vomiting was the most prominent feature, while mild diarrhœa and abdominal pain occurred in a few cases. Prostration was marked in isolated instances, necessitating the removal of the children from school to their homes by motor-car. The symptomatology indicated a condition of severe irritation in the upper alimentary tract.

On Oct. 1st the houses of 50 of the cases were visited by officers of the Leeds Public Health Department. It was elicited that, of these 50 children, 14 had stated that the milk tasted "funny" or "a bit sour," while all others had said that they had noticed nothing amiss. All concurred as to the normal appearance of the milk. Of the 50 cases, 6 commenced to be ill 2¼ hours after taking the milk, 39 2½ hours after, and 5 three hours after. According to the histories given by parents or children concerned, in 5 cases the illness lasted two hours, in 6 cases three hours, in 26 cases four hours, in 4 cases six hours, and in 9 cases seven hours. Howbeit all were fully recovered by the next morning. The comparatively short lapse of time between the ingestion of the milk and the appearance of symptoms suggested the action of a chemical poison, or of bacterial toxins already present in the milk at the time of consumption. The limited duration of the resultant illness was probably due largely to the rapid onset of severe vomiting which allowed of more or less prompt evacuation of the offending material.

Of the milk delivered to the affected schools on Sept. 30th all was consumed with the exception of the contents of one bottle. The available sample was divided into two parts, one of which was submitted for investigation to the Leeds city bacteriologist, and the other to the city analyst for chemical examination. The results of these inquiries are given below.

Conditions of Dairy and Farm.

The dairy through which the offending milk was supplied is a well-constructed brick building of 18 by 12 by 10 feet internal dimensions. The walls are of plaster and limewashed, the floor is of concrete, lighting and ventilation are adequate. Town's water is laid on. The sink is trapped and cut off, the waste-pipe discharging on to an outside gully. The dairy is fitted with a gas-heated hot water boiler for treat-

ment of bottles and utensils. The bottles for school milk are brought from the school about noon each day (there is no duplicate set). They are thereupon rinsed and placed in cold water to soak. They are subsequently washed and brushed out with hot water, rinsed in cold water, and finally placed neck downwards in suitable racks to drain and dry. There has been no actual sterilisation by boiling or by steam. No chemical is employed in the cleansing process. The dairy fittings and utensils were found in a satisfactorily clean condition, which is in accord with previous findings.

The farm, which constituted the source of supply of the milk in question, had been occupied by Y for some few months only. The farmer had but commenced to produce and sell milk on Sept. 29th, having purchased the necessary herd of cows within the previous week. He was not at the time registered with the appropriate local authority as a milk producer. The cowsheds at the farm are two in number, and both were found extremely dirty. The larger shed has recently been reconstructed, and in that respect is satisfactory. The smaller requires improvement in paving and lighting. The farmyard was dirty and muddy, but no manure was present. The water-supply is derived by pumping from a deep well, and the supply is described as abundant, and has since been found to be of good quality. There is no milk room and no cooler. The farmer stated that his practice was to stand the filled churns in a trough of water. The milk produced on the evening of Sept. 29th (that which was supplied, through X, to the schools on the following morning) was cooled in this primitive way. As far as could be ascertained, the churns, while so standing in the water trough, had had their lids properly in position. The churns seen at the farm were of the approved pattern. The churns and utensils are cleansed in the yard near the house by water from the well. It was ascertained that the cows were being fed on certain proprietary "dairy cakes." The farmer stated that all the cows had behaved normally with the exception of one which had arrived at the farm on Sept. 27th, and which had had slight diarrhœa which was promptly checked by modification of diet. The cows are milked by the farmer himself, with the assistance of one cowman. Both milkers were found to be in a healthy condition. It was apparent, however, that no precautions were taken by the milkers in regard to cleansing of hands and udders. The cows at the farm are 15 in number. They were duly examined on the morning of Oct. 1st, and the following are the chief points from the report of Mr. J. A. Dixon, the chief veterinary officer to the Leeds Corporation, viz.:—

Fifteen cows were examined, all of which were rather dirty about their udders and teats. The farmer stated that four of these cows had calved during the past week, whilst a further five had calved during the week before. The majority of the cows bear on their teats small scars, the sequelæ of variola. One red cow which calved about a fortnight ago still retains her fœtal membranes, and is discharging a purulent fluid per vulva. She is also affected with chronic suppurative mastitis in the right forequarter, and acute suppurative mastitis in the left forequarter, but her hind quarters are apparently healthy and the cow has a normal temperature. The farmer stated that the milk of this cow has not been put in the churns, but has been fed to the pigs since she calved. With these exceptions all the cows appear healthy.

In view of the conditions found at the farm, steps were taken to ensure an immediate cessation of the milk-supply therefrom into Leeds, until such time as an assurance was forthcoming from the appropriate county authority that the provisions of the Milk and Dairies Order with regard to the methods of production and handling had been complied with.

Bacteriological and Chemical Reports.

On Oct. 2nd Prof. J. W. McLeod, the Leeds city bacteriologist, reported on the sample of milk as follows:—

"Milk contained 23 million bacteria per c.cm. There are colon bacilli present in 1/100 c.cm., but these are masked by another bacterium which probably belongs to the coliform group, but has very slight fermentative activities. This last bacterium is the predominant micro-organism in the milk. It does not correspond to any of the known pathogenic types."

The result of the city analyst's (Mr. C. H. Manley) investigation, which came to hand on Oct. 3rd, reads as follows:—

Composition.

Non-fatty solids ..	9·12 per cent.	Ash	0·74 per cent.
Fat	4·10 „		
Total solids..	13·22 „		

"The sample was uncurdled when received, and had not been heated. My examination has proved the absence of preservatives, metallic poisons and alkaloids. Tests were also made for tyrotoxicon (diazobenzol) with negative results. This substance, which may cause sickness and diarrhœa, is liable to be formed in milk and milk products in the summer time. The normal figure for the ash supports my findings as regards the absence of the non-volatile poisons. The chemical composition of the milk is distinctly above the average. With the observation of the proper precautions governing its production, this milk should compare extremely favourably with others on sale in the district."

Summary and Conclusions.

The outbreak of sickness, although of alarming extent, was short-lived, and complete recovery within 24 hours occurred in all the 83 cases.

Milk was the only common factor in the ætiology, and there can be no doubt that it was causative. The milk was found to contain no metallic poison, no alkaloids, no tyrotoxicon, and no preservative. It was rich in fat, due largely to the fact that it came from a herd of cows, nine of which had calved within the previous fortnight. There is no reason to believe, however, that the chemical composition of the milk was in any way responsible for the outbreak. The bacteriological investigation showed the milk to be grossly contaminated. The bacterial content proved remarkably high, which, per se, would render the milk injurious to young children. The predominating organism did not admit of classification according to known types. The evidence points to bacterial toxins in the milk as the cause of the sickness.

A survey of the evidence, in the attempt to decide between dairy and farm as the source of contamination, would appear to indicate the farm. The conditions there were quite unsatisfactory, and it is evident that the farmer in question took on a contract to supply milk before he was prepared as regards premises and equipment to produce under proper conditions. It is significant that the outbreak occurred on the very first day on which X supplied Y's milk to the schools. X had previously supplied the schools with bottled milk from another source without untoward result. The fact that five cases of sickness occurred in children of X's private customers, to whom the milk was delivered loose, would appear to exonerate the bottles and the process of bottling.

Briefly the outbreak appears to have owed its origin to the fortuitous circumstances of a farmer who supplied milk into the city before he was registered with his local authority, and consequently before the inspectorate concerned had had the opportunity of inspecting his premises and methods of production. Such a contingency is very unlikely to recur.

I tender my thanks to Prof. J. Johnstone Jervis, medical officer of health for Leeds, for permission to publish the above extracts from my official report.

PAYING PATIENTS AT READING.—A nursing home for paying patients has been opened in connexion with the Royal Berkshire Hospital at Reading. A large private house adjoining the hospital has been purchased and so adapted that the rooms occupied by patients look out upon timbered lawns. The home will accommodate 15 patients, eight in double-bedded rooms and seven in separate rooms. The stables have been converted into a massage department.

MENTAL HYGIENE.

CONFERENCE IN LONDON, OCT. 30TH–NOV. 2ND, 1929.

THE National Council of Mental Hygiene and the Tavistock-square Clinic, together with a large number of coöperating societies, organised a Conference on Mental Health, which was opened on Oct. 30th by Lord BRENTFORD. Messages were read from the Minister of Health, Mr. D. Lloyd George, and corresponding societies in many countries. We summarise here certain of the discussions with a direct bearing on medicine.

The Need for Enlightened Public Opinion.

Sir MAURICE CRAIG said that the mental hygiene movement was a layman's movement. To repair disease was a basic factor in medicine, but to live well and free from disease was something better. If we were to guide the child and the man along the path of health that permitted fulfilment of the purpose of life we must alter our conception of disease and ill-health. Something more fundamental than disease determined the way in which the individual would react to stress. It was essential for a man to know himself, and for physicians to have learned of those things that might vary disease and determine its permanent effect on the patient. The aims of the National Council were wide, for they covered life itself. Minor mental disturbances might be brought about in endless ways, and were usually a slow and progressive failure, of which the early stages were often overlooked or misunderstood. It was tragic to think that for the vast majority of patients nothing was done until mental disease had become serious and chronic.

Mr. LAURENCE BROCK (Chairman of the Board of Control) emphasised the necessity for an educated public opinion. The results of the great advance made in mental hospitals, he said, were yet not as good as they should be, because patients were not treated early enough. The general public did not realise that only two public mental hospitals in this country could accept patients before the stage of certification had been reached. Much could be done by the establishment of out-patient clinics to make the public realise that the mental institution was a hospital seeking to restore. The propaganda of voluntary organisations would make the public understand what could be done, and also educate them to a kindlier attitude towards the discharged patient. We needed a passionate belief in what might be accomplished by the best possible organisation and equipment.

Dr. LETITIA FAIRFIELD spoke of

Child Guidance.

Modern criminology and psychology, starting from wholly different aspects, she said, had united in demonstrating the importance for adult behaviour of childish habit-formation and impressions. The origins of the chronic neurotic and the old lag alike were likely to be found in a mismanaged childhood. Successful schemes of guidance would always depend on certain simple factors—e.g., thorough examination of the child and his environment, and coöperation with parents, teachers, and other persons in authority together with constructive plans for strengthening character and developing good habit-formation. Causes of maladjustment in any case were seldom single. It was possible to go much too far in condoning first offences and overlooking criminal tendencies in the young; guidance clinics would draw attention to the gravity of the tendencies, and correct them before irrevocable habits had been formed. The chief danger for the new movement was the enthusiasm of child-lovers, who thought it "all so simple," and believed that guidance clinics could be run on a little common sense. The work was extremely delicate and difficult, and needed highly trained experts with a background of exact scientific knowledge of psychology, mental disorders, and social service. Psychological work for children could never replace, but could only strengthen and assist, the old-fashioned guidance and discipline that the child must have from its parents; that had always been, and always would be, the best.

Canon T. W. PYM expressed his gratitude for the work of the Tavistock Clinic, and stressed the great importance of environment in mental hygiene, and the tragedy resulting from lack of early treatment. One of the great obstacles to early treatment, he said, was the special face and the special voice considered suitable when referring either to mental disorder or to sex. He pleaded for the view that sex was a gift of God, quite necessary and quite, quite ordinary, and for an equally sane attitude towards mental disorder. He urged the importance of educating the students who were to be the general practitioners of the future. The Christian minister, he said, was frequently groping in that shadowland where the apparently moral or spiritual difficulty was in truth largely mental, and he was for ever competing with the results of uninformed teaching on sex, of wrong upbringing at home—as often too kind as unkind—and of wrong education. The Church was not an ambulance; its gospel was a gospel of the development of man to his fullest capacity.

At a session on the subject of sex education the Chairman, Mr. W. H. FYFE (Headmaster of Christ's Hospital), spoke on

Sex Education in Public Schools for Boys.

While admitting that disastrous incidents might occur during school life, he thought that real tragedies were very rare. The sources of trouble were ignorance, exaggerated reticence, and the furtive, sniggering, and false attitude towards sex inculcated by certain cinemas and newspapers. It was fatal for the schoolmaster to set about giving information; imparted at the wrong time it might cause serious harm. The only cure was the "word in season," but that season was very difficult to find. It was always wrong to give more information than a boy required at the time. Physiological disquisitions would leave a boy as ignorant as before and even more pruriently curious. Almost the only people who could recognise the right moment were the parents, who had intimate knowledge of the boy and held his confidence. Most schools spread round themselves an atmosphere in which the vulgar attitude towards sex looked mean; the public school might be tainted by the world, but it stood on the opposite side from the flesh and the devil. Mr. Fyfe welcomed the modern frank discussion of all subjects; it enabled the master to talk freely to his older boys, without damaging that modesty which was Nature's guardian of sex, and to spread through his house an atmosphere of regarding sex as no nastier than electricity. The master could elicit romance on the side of health; at the time of puberty romance was always active just below the surface. He worked in a monastic life, where big boys quite inevitably fell in love with little ones—a natural, a fine and an idealising thing. The wise master admitted this, but pointed out to the elder boy how petting and spoiling would hamper the development of the younger, and called on his genuine affection, putting him in charge of the youngster he loved. In helping boys to develop themselves confidence was always right, even if misplaced. If a boy's sexual development went wrong, he obviously could not remain in the community, but he should be shown, and the other boys should be shown, that his position was comparable with that of some other boy who had had to leave because of a weak heart or a groggy leg; the trouble should be looked upon as a temporary derangement of the nervous system. The same attitude should be taken towards sex as towards digestion and excretion. The general average of all the influences brought to bear on boys raised the odds heavily against the chance of their getting through

puberty without a great deal of trouble, but during that stormy period they could be in many worse places than a boarding-school.

Miss GERALDINE COSTER (Headmistress of Wychwood School, Oxford) spoke on

Sex Instruction in Schools for Girls.

She had found of recent years, she said, that nearly all mothers agreed that girls should have some sex education, but many of them felt unable to give it themselves. For many reasons, education by the mother was the best, but the task required a high degree of skill and psychological insight. The over-conscientious mother who tried to answer questions, before they were asked produced indifferences, resentment, boredom, and forgetfulness. The child only wanted to know when it wanted to know, and not at any other time. A child was never shocked at sex information given when it wanted it, but was apt to be very seriously shocked when the instruction was given unsought. The casual mother who gave an irreducible minimum at puberty caused bewilderment, resentment, and adolescent neuroses. The scientific mother who thought that children would learn all they needed from breeding rabbits only stimulated curiosity, for children often failed to draw the analogy. The books and leaflets written for parents were usually far too sentimental and personal, and might outrage the child's sense of emotional integrity and reserve. One portentous and embarrassed interview was no good; there must be an attitude of such perfect frankness that the children would ask freely and spontaneously whenever they wanted; it was most important to make it easy for them to ask for further information at a future date. The difficulty of giving instruction at school was to secure this free inquiry. Instruction should not be given in class but individually, or to a pair of friends, if they were very young. It was not wise to suggest any problem which had not already worried the child, but the information given must be complete and explicit as far as it went, or phantasies would arise. The technique of the instructor was the one important matter; a sense of purity and cleanliness was conveyed by manner alone. If the instructor felt that sex was ugly the children would know it, say what she might. She must be absolutely matter-of-fact, and should not talk too much about beauty and holiness. The gêne always came from the adult; children were quite simple among themselves. It was absolutely futile to warn children against future dangers, but the school could and should inculcate a distaste for the clandestine, and a high standard of love and service, personal integrity and debt to the State. This was true sex education, as apart from sex instruction.

Mrs. C. NEVILLE ROLFE said that ignorance on matters of sex was at the root of some of our major social problems—e.g., venereal disease. The League of Nations "Reports Committee" had urged the necessity of changing the attitude of mind of the rising generation towards the problems of sex. It was useless to leave the education of children in the hands of ordinary adults, who lacked a scientific setting and suffered from the impingement of sex problems on their own lives. As tragi-comic examples she cited a mother who said in perplexity, "We gave Winnie a rabbit (*a* rabbit!) six months ago and she does not seem to have learned anything," and the university woman who started a chicken farm and mixed all the breeds together in the runs: "Oh, it's quite all right," she said, when questioned, "I always separate them at night." It was a terrible indictment of our education that such people could exist. Sex knowledge was only one part of the wider biological knowledge required by the citizens of any democracy; the practical problem was how to translate the small available scientific knowledge into popular teaching. We needed a national programme adapted to the different age-groups. The first thing was to give the teachers the right attitude of mind, which would disseminate itself unconsciously throughout the school. Even if the approach to sex had to be made at school, it was important to create in the home an atmosphere favourable to that approach; this might be done by parents' conferences. Information ought only to be given actually by those who had real knowledge, both of their subject and of young people.

Dr. CRICHTON MILLER spoke of the unconscious reluctance of the adult to let the child grow up and learn the secrets of adult experience—a very important, though unrecognised, factor. A good deal of parental influence was exerted on the ground that the parent wanted the child to grow up "with a strong character," but the capacity to resist self-indulgent impulses was not in itself evidence of strong character. A third source of parental error was the natural desire to "safeguard the child's future." It did not follow that the parent was qualified to convey the right feeling; the disillusioned could influence the young in no helpful way, and the frustrated had better keep quiet. The confusion and taboos and inner unresolved conflicts and prejudices of most adults made them impotent before a child's innocent and simple questions. The answer might be verbally correct and yet put across the wrong feeling. The greatest care must be taken not to intrude; constant watchfulness for the right moment was the only safe attitude. The child must be asked to exercise self-restraint on grounds as far as possible comprehensible to himself, and this positive basis could only be taught by the adult who had experienced as the reward of continence, partial or complete, an utter fruition of life in sex. True education in sex only began when the child's feeling was involved; the moment of his first gratifying sensory experience was a big crisis. Everything then depended on the ability of the parent to convey to the child real sympathy—real community of feeling. He should let the child know that these experiences had given pleasure to him also, and—properly treated—had led on to rich and noble experience. Into no one sentence could more parental mistakes be crammed than into the common phrase: "Mummie can't love her little boy if he does horrid things like that." Why "her" little boy? Why "little," when he had just had the first flash of that experience which should eventually make him a man? What right had she to label it "horrid"? And would she really cease to love him if he masturbated? Sexual malpractices averted because of threats did not contribute greatly to character growth. It was the duty of those who had found something sacramental in sex-life to pass it on to the children, free of taboos and fears.

At a discussion on the

Place of Mental Hygiene in Social and Public Health Work

the chair was taken by Sir GEORGE NEWMAN, who stressed the psychical factor in all physical disease and maintained that soundness of mind was the key to all human progress.

Dr. H. P. NEWSHOLME defined mental ill-health as failure of the individual to use his mental machinery with a degree of efficiency sufficient to maintain easy running for normal demands with a reserve for emergencies. Failure might arise through innate delicacy of the mental machinery, through laziness or insufficient attention to the machinery, or through excessive friction produced by the pressure of adverse external forces. He reviewed the mental machinery from the points of view of the physical apparatus, the mental cycle, and the phases of feeling, thinking, and acting. Full and exact response by the body would only follow on clear-cut thinking and understanding, and this only on full appreciation of the feelings. This demanded a momentary preoccupation with the feeling at its moment of impact, so that it was blurred to a minimal extent by the simultaneous impressions of other feelings. The nicety of an individual's adjustment of his incoming feeling was a matter of basic importance to his mental health. The pre-occupations of the past and the future, which lingered

too long, or appeared before they were due, were the old seven deadly sins, to which must be added fear. People should be taught the dangers inherent in indulgence in certain basic emotions. The same principle of unity applied to thinking: one thought at a time, and that a pure thought, uncoloured by desires or fears. Clear feeling and clear thinking must depend on good habit-formation in early life. This needed concentration and interest, regularity and persistence on the part of the mother, as well as constant watch against relapse. The will would be effectively exercised only through the stimulus of interest, which in the infant was largely vicarious and exercised on its behalf by the mother. Factors endangering the child's growing active interest were fear, lack of love, physical ill-health, fatigue, over-stimulation, and irregularity in household routine. These would distract from habit-formation, and give an appearance of irritability, indecision, and lack of purpose. Later in childhood arose the danger of excessive or too prolonged preoccupation with a habit once formed, so that the child was unwilling to pass on to the next. Preoccupation might occur in the unconscious mind as well as in the conscious if a feeling impinged on a mind unprepared to deal with it. The cure of unconscious preoccupation was the province of the psychiatrist, but its prevention lay in good habit-formation; the feeling had originally been put aside instead of faced, because of laziness or cowardice of mind. To avert the catastrophe, the individual must have an alert courage; its absence was a pointer suggesting dangerous weakness in the mental make-up. Preoccupation, conscious or unconscious, caused a poor response, with insensitiveness of feeling, flabbiness of thought and bodily tone, apathy, lack of decision, and lack of interest in the external world, save in matters related to the points producing the preoccupation; to these the individual yielded too strong and uncontrolled a response. This was an adverse factor in the mental health of those around him, as well as in his own. The key-words of mental health were interest, effort, regularity, concentration, and a capacity to terminate concentration, and intellectual and emotional honesty.

Miss HESTER VINEY spoke from the point of view of the public health nurse, than whom, she said, there was no more zealous, devoted, and effective champion of the cause of mental health. She was in a position to deal effectively with the educational side of this question. Miss Viney regarded the constant calling forth of fear as one of the most important causes of mental troubles, and suggested as constructive measures gardens and play enclosures free from noise and traffic, nursery schools, and safe balconies to all tenement rooms. The principles of mental health should be taught in season and out of season, as those of physical health had been taught.

A paper by Miss E. M. LAWRENCE (Chief Social Worker at the Child Guidance Clinic) was read in her absence. She dealt with the place of the social worker in mental hygiene, and remarked that to many people behaviour was causeless, and had to be taken as it came, and fought against blindly until their difficulties became so serious that some help must be sought. The kind of help they got was critical; the ill-advised went to all kinds of quacks and necromancers; the well-advised went to doctors, but did they always get what they ought to get, even there? The worst-served class were the borderline cases who remained in the community, competing with better people, and bound to be defeated.

The Child and the Parent.

The chair at this meeting was taken by Dr. CYRIL NORWOOD (Headmaster of Harrow), who observed that to become a parent was easy, but to get out of it without disgrace was difficult. The relationship between parent and child was largely one of give and take, and a great deal depended on the kind of parent and the kind of child; modern psychology tended always to blame the parent. He mentioned the great importance of the education of the child by other children.

The Rev. L. W. GRENSTED pleaded for greater leisure and quiet, without which the right parental relationship was impossible. We must simplify home life, and limitation of families might in many cases be the only way of securing full and adequate family life. The medical aspects of conception control had been well thought out; the theological aspects had been only too prominent, but the psychological—the most important aspect which would eventually turn the scale—had not received nearly enough attention. He pleaded also for the improvement of children's literature, although it was already much better than specimens like the "Fairchild Family." He referred to the desire of parents to keep their children for ever children, like the dreadful and ominous figure of Peter Pan, the most sinister form the mind of man had created.

Dr. HELEN BOYLE emphasised the value of training a child in adaptability, and the lack of necessity for perfection in parents. Many people, she said, wore themselves to fiddle-strings by trying to be resigned, when a little kicking would do a world of good. The enormous number of suicides suggested that we were not giving our children that faith that can move mountains. Training in adaptability could begin very early, and a healthy baby ought to be taught to sleep under any conditions of noise or light. Children were largely preoccupied by feeling their personal contacts with life and experimenting with happiness, and it was possible to safeguard them too much from the discoveries they ought to make. It did a healthy child no harm to over-eat itself and be sick, and the child thereby learned valuable lessons. A perfectly organised childhood did not produce an adaptable adult. "Of nothing too much" was a safe motto for the upbringing of children. Parents should strive for a large peace of mind; the child also made mistakes—often by trusting too much, becoming disillusioned, and then doubting too much—and most people thought much too badly of themselves, and then compensated by swelled head.

In the course of the subsequent discussion Sir MAURICE CRAIG maintained that the ability to sleep under disturbing conditions was an idiosyncrasy, and not merely a matter of training. He congratulated the Middlesex Hospital on its advance in ceasing to wake the patients at 5 A.M., and spoke of the appalling results of mixing big and small boys in dormitories, so that the youngsters were awakened when their elders went to bed. To those who advised "leaving it to Nature," he recommended a study of the garden left to Nature for six months. Dr. MARGARET LOWENFELD pleaded for more directed attention to play.

The Problem Child.

At this session the chair was taken by Dr. R. H. CROWLEY (Senior Medical Officer, Board of Education), who said that the child's life must be integrated in some way, and that a policy of coöperation between the home and the school was needed.

Miss E. M. NEVILL (Psychologist to the Children's House, Bow), distinguished three outstanding groups of problem children: disturbers of the peace, reality shirkers—the apathetic, timid, nervous and dreamy—and moral offenders. Adler had suggested three causes: that the child felt himself unloved, or inferior, or that he was spoilt. If with "unloved" one included "misunderstood," and with "inferior," "superior," this would cover most cases, but there was a difficult temperament to begin with, and certain illnesses might play a part. She gave examples of real children, showing how serious trouble might arise from very simple things which could have been easily settled by a little common sense. Much psychology was commonsense. She made a plea for the outstandingly clever child, for whom so little had been done; brilliant children were misfits, even more than dull children. The trouble should be discussed openly and frankly, without emotion, in order to find

the cause. The part of the father in the child's life must not be forgotten.

Dr. E. A. HAMILTON-PEARSON said that whether or not a child would become a problem child depended largely, if not wholly, upon its attitude to life, the product of its whole practical experience at any given moment. Attitude, moreover, determined almost exactly the experience of the immediately ensuing period; it caused the results of future experience to be similar to those of the past. Character was the outcome of recurring experience; therefore, if a child was to be able to form a strong character, it must start with a right attitude to life, and for this it must be able to learn right values for its thoughts and actions. An important environmental factor in the causation of wrong attitude was the lack of right, understanding discipline. Parents were too apt to allow children to make decisions for the making of which they had neither the data nor the mental apparatus for fear of repressing their personality. This was a chase after a false ideal; real freedom could only be a psychological state. Stable discipline implied complete freedom between known limits imposed for the good of the majority. The child produced by complete freedom of expression overvalued the importance of its own desires, and the restriction of school life bewildered it, so that often the seeds of neurosis were sown. The educational system created problem children by confining the eager, urgent, and turbulent interest of the young within a rigid and monotonous system, so that work came to be regarded as something unpleasing and to be avoided as much as possible. A rigid contrasting distinction between work and pleasure was a bad attitude for life. The educational system also created problem children by its adherence to a purely intellectual ideal in education. There were several types of mind, and each group of types required a different educational approach. Under the uniform system many children were committed to a dull routine, which daily emphasised their inferiority; they lost resolution, initiative, and confidence, and became the drifters in life. Adequately stimulated interests were the vitamins of the mind; if mental scurvy were to be prevented, the whole educational system must be recast. The refusal of the budding adolescent to grow up was becoming more and more common. Before the war there had been a sharp line between childhood, with its occasional treats and strict obedience, and adulthood with its relatively boundless freedom of action and conduct. It had been worth while to grow up. The average child of to-day had the same amusements as the average adult, and relatively greater freedom. Personally or vicariously—through the cinema—it experienced practically all that would be possible for it, and adulthood had few additional pleasures to offer in compensation for its greater responsibility. There was little in the conditions of modern industry to capture the imagination of a boy. Children who at this period became problem children nearly all suffered from atrophy of the sense of adventure, a sense which could be kept alive only if the child's lines of interest were kept clear.

INDUSTRIAL HEALTH EDUCATION SOCIETY.

A LUNCHEON was given by Lord Melchett at the Carlton Hotel on Thursday, Oct. 31st, to afford an opportunity to those interested in the objects of this Society to meet and to hear an exposition of the aims and position of the movement. Lord Melchett, who was supported by Sir Humphry Rolleston (hon. president of the Society), Lord Dawson of Penn, Sir John Rose Bradford, and Sir Arbuthnot Lane, in a brief speech welcomed a representative group of industrial employers and medical men. He pointed out that splendid work had already been done among industrial populations by the medical profession, but that much remained to be done owing to the fundamental ignorance of the bulk of the operatives and of no inconsiderable number of their employers. In regard to pit-head baths, he said, England, Wales, and Scotland were far behind the Continent and the United States, in which latter country the workman, after hours, was never seen in his work-soiled clothes, having had opportunity for washing and changing.

Sir William Milligan then described the great services rendered to public health by the Industrial Health Society, under whose auspices a number of indefatigable lecturers had submitted to varied and interested audiences the methods for the prevention and remedy of accidents incidental to their employment. The Society was formed in 1925, during which year 118 health-talks were delivered; in the following year the number increased to nearly 200, in 1927 to nearly 300, in 1928 to practically 400, while in the first three-quarters of the current year more than that number had already been given. He concluded by pointing out that the pecuniary resources of the Society had been strained to the utmost by the work which they had already undertaken and this at the time when openings for the development of that work were obvious. All the organisations of operatives in England, Wales, and Scotland had shown willingness to coöperate, recognising the obvious importance of the movement. He quoted figures to show that in 1928 the work of over half a million weeks was lost in England and Wales through sickness and invalidity, while the approved societies during that period paid out £15,000,000 in sickness and disablement benefits. While the Society, he said, had as yet made no appeal to the employers of labour for assistance, the time had come when it must be pointed out that more funds were required if the work was to go on, and he hoped that the whole movement would receive sympathetic consideration from those around him who directed important industrial businesses, and also from insurance companies.

Mr. Ben Tillett, M.P., proposed Lord Melchett's health in eloquent terms from personal knowledge of the chairman's qualities of leadership and generosity. He went on to point out that education on health matters in connexion with particular industries should be directed as much to the employers as to the employed, as the last thing the average employer thought about was the sanitary convenience and the necessities of human workers. He spoke as a non-party man, and with a real desire to see among the British an appreciation of the factor of efficiency in the matter of health. He held that the employing class had not considered with proper care the working of the finest machine they possessed—namely, that made by God Almighty.

Lord Melchett briefly replied.

GENERAL MEDICAL COUNCIL.

ELECTION OF TWO DIRECT REPRESENTATIVES FOR ENGLAND AND WALES.

Two names were selected last July by English and Welsh deputies at the annual meeting of the British Medical Association for nomination on behalf of the Association as Direct Representatives of the registered medical practitioners of England and Wales on the General Medical Council. These were Dr. H. B. Brackenbury, who has already served on the Council, and Mr. N. Bishop Harman. On their behalf the following election address has been circulated:—

We offer ourselves as candidates for election to the General Medical Council as direct representatives of the registered medical practitioners of England and Wales. One of us has been such a representative for the past five years and, as a member of the Education and Public Health Committees of the Council, has taken an intimate part in that review of medical education and of the needs of the public health service in which the Council has recently been engaged and which is not yet concluded.

We regard it as of great importance that advantage should be taken of the method of direct representation to secure the presence on the Council of additional members who have considerable experience of private practice (including special as well as general and insurance practice) in order that the conditions of such practice may be fully weighed in connexion with any disciplinary proceedings. In this regard, one of us has been in active general practice and insurance practice for many years, while the other, in addition to a long experience in private practice and as a member of a hospital staff, has held for a considerable period an important office in the School Medical Service of the London County Council. Both of us have been members of the Hospitals Committee of the British Medical Association and of the Insurance Acts Committee for a number of years, and so are familiar with those hospital problems which are so important at the present time and with the special conditions attached to insurance practice. Each of us has been, and is, in a position which brings him into contact with all varieties of medical practice and enables him to familiarise himself with general professional opinion; and we may claim in this way to be able to appreciate and to voice that opinion to an altogether exceptional degree.

In connexion with medical education it is important, we think, that the point of view of those who are the taught and the examined should be prominently considered along with the point of view of the teacher and examiner. The conditions of actual practice, general or special, are not always as prominent in the mind of the teacher as they well might be. The position of special branches of practice should not be lost sight of in prescribing the medical curriculum or in regulating training and examination—whether such special practice be followed exclusively or cultivated in association with a more general practice, especially perhaps in relation to extended or additional insurance benefits and to the clinical services of local authorities. In the administrative and legislative aspects of these matters as well as in their educational aspects, the position of the General Medical Council is one of increasing influence and importance. In our opinion such influence should be exercised in the direction of maintaining the best traditions and methods of private practice, and we claim that our familiarity with such administration and its problems will be a valuable qualification for such service as we may be able to render should our candidature be successful.

If opportunity should arise we should strongly advocate and support an increase in the number of direct representatives on the Council.

H. B. BRACKENBURY, LL.D., M.R.C.S., L.R.C.P.
N. BISHOP HARMAN, M.A., M.B., F.R.C.S.

As an independent candidate for one of the two vacant places, Dr. Arthur Haydon offers himself for election. His address is as follows:—

I offer myself as a candidate for election to the General Medical Council as a direct representative of the registered medical practitioners of England and Wales.

In 1911 I was a candidate for election to the General Medical Council, while in practice at Henrietta-street, W., and was fortunate in receiving 1000 votes, though I was not elected on that occasion. As a proof of my interest in education, I may say that I have been president and secretary of the Brussels University Medical Graduates Association for 21 years, during which time, I was in constant communication with candidates for the scientific degree all over the world. I have travelled, both professionally and otherwise, more than 65,000 miles in many parts of the world, and have studied medical practice in all climates and under all conditions. If within the province of the General Medical Council, taking the excellent example from the Dominions, I would recommend that a Bill might be promoted before Parliament to secure the complete abolition of unqualified practice, which is undermining legitimate medical practice, and making it nearly impossible for newcomers into the profession to make a living. If my candidature should be successful, it will be my endeavour to adopt a progressive policy, and to urge revision of the formula whereby medical practitioners are penalised for so-called infamous conduct in a professional sense, and perhaps to be able to modify any undue severity on the part of the General Medical Council in a disciplinary sentence on medical practitioners for trivial offences. I am not in favour of the nationalisation of hospitals. I should also be strongly in favour of an increase in the number of direct representatives on the Council, as I consider the number at present to be quite inadequate.

ARTHUR HAYDON, M.D., M.R.C.S., F.R.G.S.

CLATTERBRIDGE ISOLATION HOSPITAL.—A new wing of this hospital, erected under the auspices of the Wirral (Cheshire) Joint Hospital Board, has recently been opened. It contains a large ward for women and children, a smaller one for men, and two private wards, with a total of 22 beds.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1928 statistics of four cathedral cities, three boroughs, and one urban district:—

Name of district and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Ealing, B. .. (98,660)	14·9	10·5	0·77	1·49	1·3	1·9	41/22	—	5·5
York, C. .. (85,410)	18·1	11·7	0·99	1·27	1·7	2·2	59/28	23	4·4
Lincoln, C. .. (65,550)	14·8	12·3	1·11	1·50	1·9	2·3	58/33	23	3·1
Carlisle, C. .. (56,380)	19·6	13·0	1·08	1·48	1·6	2·0	73/46	22	0·9
Chester, C. .. (40,830)	17·0	11·2	0·95	1·44	2·0	1·9	59/24	34	7·1
Shrewsbury, B. (31,870)	16·9	12·3	0·78	1·50	1·5	3·0	56/32	22	3·6
Eccles, B. .. (45,200)	16·4	11·0	0·68	1·42	1·8	1·6	66/28	24	5·4
Billingham, U.D. (11,690)	24·1	10·7	0·68	0·85	2·8	1·2	89/—	25	10·6

The proportions of stillbirths notified per 100 live births, were: York, 2·6; Lincoln, 5·5; Carlisle, 4·8; Chester, 5·0; and Shrewsbury, 2·9.

Ealing.

Dr. Thomas Orr gives the population as 100,250 at the end of the year, after the inclusion of Northolt, when the area of the borough became 9135 acres and the density 11 persons per acre. The extension has brought many problems. The Greenford and Northolt wards get their water from the Rickmansworth and Uxbridge Company, and many new mains are needed. The rest of the area is supplied by the Metropolitan Water Board. The stream through Greenford, which caused a nuisance, is now reasonably pure. Many cesspools in the added area need abolition, involving the laying of new sewers. Of the five sewage works, two are efficient. A sludge-pressing plant is being installed at Hanwell, and chlorine treatment has kept in abeyance the nuisance from the Greenford works. Greenford and Northolt are scavenged by private contract, and are to be brought into the general scheme. New maternity and child welfare centres are being provided for the added area, and the latest school is to be of the Derbyshire type, a true open-air school, in which the class-rooms can be kept open in winter and summer, yet sheltered from the wind and adequately warmed.

Ealing applied to the Middlesex County Council for delegated powers for the supervision of maternity and nursing homes, but was refused, and the application is to be reconsidered by the Ministry under the Local Government Act, 1929. Successful proceedings were taken against a retail milk purveyor for trading without being registered, against a milk man for filling bottles not in registered premises, and against a retail milk purveyor for selling designated milk without a licence. Many dairy premises have been improved, and an incentive to this result has been provided by the greater interest taken by the public in the source of their milk-supply. Of 12 samples of ordinary milk, three were found to be tuberculous, and in two of the three cases the Middlesex County Council was successful in finding and condemning the offending cow. There were 68

notifications of diphtheria, with a 10 per cent. case fatality, and Dr. Orr comments on the delay in using antitoxin. There were 12 cases of typhoid fever, with four deaths, and 14 cases of puerperal fever and pyrexia, with two deaths. Dr. Edna Langston has been appointed to investigate maternal deaths from childbirth as desired by the Ministry. The percentage of school "leavers" with sound teeth has increased from about 36 in 1915–16 to 67 in 1927–28. By routine and special inspections, 27 children with organic, and 87 with functional heart disease were discovered, and will be specially supervised.

York.

Dr. P. R. McNaught says York is not described as an industrial town, but that in addition to being an ecclesiastical and military centre, it is an important railway centre, employs about 10 per cent. of those engaged in the cocoa, chocolate, and confectionery industry, and has beet-sugar works. None of the industries is thought to be harmful to health. There are many voluntary health societies. The diocesan home for unmarried mothers admitted 23 expectant mothers, and 27 mothers with infants, and receives a grant of £100 from the corporation. In the case of the seven maternal deaths, investigation revealed that delivery was spontaneous in four cases and by Cæsarean section in one, and that in two cases delivery did not take place, one dying from cardiac failure and the other from hæmorrhage and placenta prævia. Of 45 neonatal deaths investigated 32 were attributed to prematurity, 2 to syphilis, and 3 were "born before arrival." There appears to be no orthopædic scheme, but arrangements have been made for the admission of crippled children to the Yorkshire hospital at Kirbymoorside. There is a shortage of houses, and 1600 applicants are on the waiting-list for houses on the Tang Hall estate, where the corporation have built 1272 houses, and had 210 more in course of erection at the end of the year. One unhealthy area with a population of 805 is being dealt with, and about 750 houses are waiting for demolition or renovation when the shortage is relieved. The York House Improvement Society has been formed for the purpose of purchasing houses in need of repair, renovating them, and letting them at weekly rentals of from 3*s.* 6*d.* to 6*s.* 6*d.*, with collection and management on Octavia Hill lines. Another voluntary committee, "Tuberculosis Crusade," in its 1928 report (included), considers the housing problem the greatest barrier to their progress, and that for the great mass of slum-dwellers post-war Housing Acts have accomplished nothing. They favour the "children's rental allowance system" recommended by Mr. E. D. Simon. Out of 57 samples of milk examined, five were found to contain tubercle bacilli.

Lincoln.

Dr. D. C. Lamont, who took over the duties on June 18th, states that the small-pox epidemic, which began in November, 1927, and accounted for 71 cases in that year continued until June, 1928, causing 107 additional cases. There were no deaths. The notifications of diphtheria, 133, were higher than in any of the previous 16 years. There were seven deaths, and Dr. Lamont, in recommending an immunisation scheme, mentions that the Paris Education Authority has taken this up energetically, with the result that 47,000 children were inoculated there in the second half of 1928. The new isolation block of 10 beds, built on the cubicle system, has proved a success, and at one time housed seven different diseases. The orthopædic scheme of the Education Committee began in June, 1928, and was extended at the end of the year to include children under five years and tuberculous cripples of any age. The total births numbered 980. The antenatal clinic was attended by 402 expectant mothers, of whom 227 had booked for the maternity home and 175 had engaged a municipal district midwife. A fourth municipal midwife is to be appointed. There are only two midwives in private practice in Lincoln, one of whom is a "bona fide," and the other only acts as a maternity nurse. Systematic antenatal supervision by the municipal midwives has, to a large extent, abolished the unwillingness of mothers to undergo examination during pregnancy. A nuisance has arisen owing to the discharge of excreta from house-boats into the rivers and dykes, the current being very sluggish, and endeavours are being made to combat it. A voluntary slum clearance committee has been formed with the object of providing low-rented houses for necessitous tenants. The immediate aim is to subsidise 100 houses with £70 each, and to let them at 6*s.* 6*d.* per week, inclusive of rates. The inclusive rental of municipal houses is 15*s.* 4½*d.* for the parlour, and 13*s.* 2*d.* for the non-parlour type.

Carlisle.

Dr. Joseph Beard reports that 29 samples of fresh cow's milk were examined for tubercle, that two were found positive, and that as a result the veterinary inspector of the Cumberland County Council eliminated two milch cows from herds in his area. The corporation maintains a well-equipped slaughter-house. Meat stalls are only permitted in the covered public market, and all butchers' shops are fitted with windows. Dr. Beard complains that, in too many instances, patients are not notified as suffering from tuberculosis of the lungs until, frequently as the result of repeated bacteriological examinations, tubercle bacilli are found in the sputum. The births numbered 1109, and 174 confinements took place in the municipal maternity home. This home has now trained 24 pupil midwives, and all of them passed the C.M.B. examination at the first attempt. The antenatal clinic was attended by 201 expectant mothers. Of the 122 infant deaths, 51 occurred before the age of one month, 42 before the age of one week, and 29 before the end of one day. Dr. Beard expresses his disappointment at this result, seeing that in 1927 Carlisle won third prize among the towns with populations from 50,000 to 100,000 in a competition as to the greatest reduction achieved in neonatal mortality. Thus, in 1927 6 children died in the first day, 14 in the first week, and 25 in the first month, whilst the figures for 1928 were 29, 42, and 51 respectively. For a long time statistics have been kept as to the aid to survival of breast-feeding as compared with bottle-feeding. A table shows that in 1928 the mortality-rate per 1000 of 754 breast-fed infants was 25, and of 195 bottle-fed infants was 56, but also gives the curious result that the mortality-rate of 123 infants, partly breast- and partly bottle-fed, was 81. The lessening mortality among bottle-fed infants yearly indicates increased skill on the part of the mothers. Forty-two debilitated infants, who were practically unable to be fed (presumably those who died in the first week), were not put in any of the classes mentioned. The clearing of one slum area and the rehousing of the tenants is in progress. Forty-one of the evicted tenants were induced to take new corporation houses, while 13 others secured better houses by conceding their claim to a new house to other householders.

Chester.

Dr. D. Rennet reports that the maternity hospital is a voluntary institution, and that the corporation paid for 10 of the 120 city patients admitted to it during the year. The hospital also admits patients from outside the city, and has an extensive extern department and an antenatal clinic, which was attended in 1928 by 152 expectant mothers. Dr. Rennet emphasises the need for institutional treatment for mental defectives, and hopes that progress will now be made with the scheme of the Cheshire joint board. The chlorination of the water-supply, begun in the last months of 1927, appears to be satisfactory, but Dr. Rennet hopes the water company will provide more sedimentation and storage accommodation. During 1928 39 patients were treated at the ultra-violet ray clinic. Rapid and very evident

improvement is claimed in debility and early rickets, considerable benefit in some forms of non-pulmonary tuberculosis, but only qualified improvement in lupus.

The new municipal houses numbered 141 and private enterprise completed 35. Closing orders were made for 28 houses, so that the net gain of new houses was 148. The dairy herds are inspected by the veterinary officer but only twice a year. As the result of 17 biological examinations, one tuberculous cow was found and another was discovered by microscopical examination of the milk. The public analyst reports that the milk fat in eight samples of ice-cream examined varied from 1 per cent. to 14 per cent., and suggests a standard of 12 per cent. as reasonable.

Shrewsbury.

Dr. A. D. Symons expresses his emphatic approval of the new health department premises. He gives an interesting quotation from the report of 1878, in which the medical officer expresses the opinion that with its advantages Shrewsbury might attain a rate of 16 per thousand, but thought an average a little over 17 more within the bounds of probability. In 1878 there were 250 cases of typhoid fever with 20 deaths, and the then medical officer was right in believing this "to be absolutely and completely removable." Dr. Symons thinks his predecessor would be surprised to learn that in 1928 the birth-rate was 16·9, the death-rate 12·3, and the infant mortality-rate 56, as compared with a birth-rate of 32·2, a death-rate of 22·2, and an infant mortality-rate of 140, in the year of which he wrote. The infant mortality-rate of 1928 was increased in comparison with the previous year (43) largely owing to an unusual number of twin births. There were 13 sets of twins amongst the 552 births. In the five preceding years the sets of twins numbered 4, 6, 7, 2, and 4, respectively, and of the 31 infant deaths in 1928, 8 were those of twin babies. Dr. Symons, after investigation, divides the 31 infant deaths into 8 unpreventable, 13 possibly preventable, and 10 preventable, and sees no reason why the rate of Shrewsbury should not be between 20 and 30, even with our present knowledge. The dual system of water-supply, consisting of drinking water supplied by means of self-closing water pillars in the streets and treated river water laid on in the houses for domestic purposes, has given no anxiety as regards quantity or quality during the year. Hitherto, in the housing schemes preference has been given to tenants (*a*) who had children, or (*b*) who could afford the rent. The majority of those selected respond to the uplift, but there are many who fail to carry out their agreement, and who show that they are incapable of, or indifferent to, cleanliness and better habits. Dr. Symons thinks it is unfair to rehouse bad tenants next door to good ones, and his remedy is a separate colony, managed on Octavia Hill lines, from which families who showed a desire to rise could be ultimately transferred to a different housing estate.

Eccles.

Dr. J. E. Spence reports that measles and whooping-cough were both epidemic during the year. During the past 15 years the mortality from these two diseases has been more than three times as great as that from scarlet fever and diphtheria combined. Measles has been notifiable in Eccles since 1920 and whooping-cough since 1924, so that it is now possible to give figures for the case fatality of these diseases. During the first year of life 1 patient out of every 21 dies from whooping-cough and 1 out of every 31 from measles. During the second year 1 out of 36 dies from whooping-cough and 1 out of 35 from measles. During the third year 1 out of 43 dies from whooping-cough and 1 out of 38 from measles. After three years old the fatality of these diseases becomes almost negligible, as at all ages over three 1 out of 880 patients dies from whooping-cough and 1 out of 396 from measles. If these facts could be brought home to parents, says Dr. Spence, the fatalistic attitude might be abandoned, and a greater effort made to protect the younger children from infection. Out of 12 samples of milk examined two were found to be tuberculous. The first came from a borough farm. All the cows were examined by the veterinary surgeon. A sample of milk was taken from a suspicious cow, and the remainder were divided into four groups of five for sampling purposes. The separate sample proved negative. One of the four groups gave a positive result, but a cow from this group was sold shortly after the original sample was taken, and the milk from the remaining four proved negative. Doubtless the cow sold was the offender. The first sample was taken on August 14th, and on Oct. 24th six pigs from this dairy farm which had been fed on skimmed milk were found at one of the slaughter-houses to have tuberculosis of the mesenteric glands and liver. Dr. Spence cites this as an effective demonstration of the risk which young children run. After a demonstration of the use of a solid smokeless fuel in the public health offices, the trader, who held the local agency, found that the demand exceeded the supply. This fuel is also being tested for the heating of the public central library.

Billingham.

Dr. T. J. Kirk submits the report for this rapidly growing industrial town, which is being tacked on to the Durham village of Billingham and the older district of Port Clarence. The new houses in 1928 numbered 502. The staff of district nurses has been increased and the two child welfare clinics are well attended. Other problems are being energetically tackled. For example, the privies at Port Clarence are being converted to w.c.'s, the collection of refuse and tipping methods are being reorganised, and the "Bendy," a large sheet of filthy stagnant water, has been abolished by drainage and filling in with clean earth. The three butchers have adopted the Cash captive bolt pistol. The main problem of the district, however, is atmospheric pollution, rather than smoke abatement, owing to the emission of dust and grit by three of the most important works in the area. Synthetic Ammonia and Nitrates, Ltd., cause a serious nuisance by the emission of fine grit and dust from their method of steam raising by pulverised coal. It is hoped that the fitting of water sprays into the chimney stacks may be an effective remedy. Casebourne's Cement Co., Ltd., give off a fine yellowish-grey powder, which, under certain weather conditions, covers the whole of the property within a considerable area. An experimental dust arrester proved a failure, but further experiments are in progress. The nuisance caused by the North Tees Power Co. is a much smaller evil and more local, and affects fewer dwelling-houses. In this case steam is raised on the chain grate system, and grit is only emitted at intervals, when soot-blowing is in operation. One dust arrester has been fixed by this company, and it is expected that a similar apparatus will be fixed to each chimney stack. Finally, it can be said that all the firms mentioned are making every effort to find a complete solution to their respective problems.

MENTAL HOSPITAL REPORTS.

THERE were 900 patients in the *Dorset Mental Hospital* on Dec. 31st, 1928, an increase of 20 during the year, and there is still danger of overcrowding. A scheme is under consideration to hand over the north male block to the female side, and to build a new dormitory on to the old recreation hall to provide additional accommodation for the men. The recovery-rate was 39·56 per cent. and the death-rate 5·68 per cent. Apart from six patients suffering from phthisis, and six women known to be carriers of typhoid, the patients had extremely good health and suffered from no epidemics. A dentist visited fortnightly and saw 372 patients. A dormitory is to be enlarged in order to free a room for handicrafts, and an instructress from the Occupation Therapy Association has initiated the work by giving a course to patients and staff. Two male wards are administered on the open-door system, and 84 men and three

women are allowed on parole beyond the estate. The laboratory is well equipped, and research is carried on as well as extensive routine investigations. The number of examinations at the bedside and in the laboratory reached 2425 during the year. The discovery of a hydatid cyst of the liver infected with the typhoid bacillus led to a routine search for typhoid carriers by the method of Wilson and Clair. The Meinicke micro-reaction has been carried out on all new admissions, but has not been found to parallel the Wassermann reaction closely enough for it to be relied upon. A leucocyte study is being continued, and the importance of frequent systematic leucocyte examination in mental disease is emphasised in the report. Buscaino's black reaction is done as a routine, and its relationship to Scheiner's reaction is to be worked out. The colloidal reaction of Takata-Ara is being investigated. Patients with general paralysis are treated with tryparsamide; three out of nine developed a negative or weakly positive Wassermann reaction. The out-patient clinic is held weekly at the Dorset County Hospital. Five nurses and two attendants passed the final R.M.P.A. examination, so that about one-third of the nursing staff are now certificated or registered.

The *City of Leicester Mental Hospital* at *West Humberstone* had 955 patients on its books on March 31st last. The recovery-rate was 53·64 per cent. and the death-rate 5·38 per cent. Cause of death was verified by autopsy in 92 per cent. of cases. A systematic investigation revealed two typhoid carriers, one of which has cleared up under treatment, while the other remains a source of infection. General paralytics are being received from a neighbouring mental hospital for malarial treatment, and ten cases have had pyrexial attacks induced during the year. There was one death unassociated with malaria, three patients were slightly improved, and three were discharged. Leave of absence was granted 2448 times to men, and 1250 times to women during the year, and the number of week-ends allowed has increased. Of the male patients 53 per cent., and of the female 37 per cent. are on full or limited parole; 14 men on parole escaped during the year. Useful employment was found for 77 per cent. of the patients. Cinematograph entertainments are given regularly in the hospital, and small parties of women go regularly to local cinemas and for motor drives. The routine work of the laboratory continues to increase. A small outbreak and a couple of isolated cases of Sonne's dysentery occurred during the year, but responded readily to treatment. The visiting dentist inspected all new cases and 91 old inmates, and performed 339 operations. A new nurses' home is proposed, and the old superintendent's house has been adapted as a unit for 332 women patients. A Vermes photometer has been installed. Two nurses obtained the qualifications of the General Nursing Council.

The *Stafford Mental Hospital* had 1022 patients in residence on Dec. 31st, 1928, an increase of 19, despite the removal of 30 men to the East Riding Mental Hospital. There was a deficiency of 73 beds, although the isolation hospital, with 20 beds, is still occupied by male convalescents. The new reception hospital, now being built, will relieve but will not cure the situation. The recovery-rate was 25·69 per cent. and the death-rate 6·36 per cent. Autopsies were held in every case where permission was given. Sixty-three patients were allowed out on trial before discharge, but only one was given money allowance. Two men have parole beyond the estate, and 33 men and two women are free within the grounds. One ward on each side and the male convalescent block are administered on the open-door principle. There are 11 male and eight female patients suffering from tuberculosis, but there has been no epidemic disease. Forty-eight attendants and eight nurses are certificated or registered. At *Burntwood*, the second of the three Staffordshire mental hospitals, there were 924 patients on Dec. 31st, 1928, a decrease of 19, which is almost entirely due to transfers of men under contract. On the female side the hospital is overcrowded, and the vacant male beds are rapidly being filled. The isolation block is still occupied by male patients, and isolation has to be provided in the main building. The recovery-rate was 28·2 per cent., the rather low figure being the result of a serious outbreak of Flexner dysentery which accounted for 22 deaths. At the time the sewers of the sanitary spurs at the back of the female ward were being excavated for replacement, and infection was probably carried on the boots of men engaged on the work and women coming from the laundry. There was also an outbreak of typhoid fever on the female side, and six patients died. The South Staffordshire Company's water was being supplied to all parts of the hospital except the female division, which was served by private well-water. This water was found to have a high *Bacillus coli* count. The connexion of the female wards with the company's water-supply was carried out as rapidly as possible, and the well was reconditioned. Vaccine was given to as many contacts as possible, and there was no recurrence of either infection. There were 31 cases of influenza with one death. Four cases of general paralysis were treated with malaria; two improved, and two—both older cases—died. Of the patients discharged during the year, 49, or 65 per cent., were given preliminary periods of trial, 20 of them with money allowances. A thermal bath has been provided in both male and female divisions, and electric light has been extended in the male wards. Since the appointment of a cowman the milk-supply from the farm has increased by 3727 gallons during the last year. Condensed milk is not now used, but butter is only given to under-nourished patients. An ultra-violet ray apparatus has been installed, and two female solaria have been fitted with "Vita-glass." Four attendants and one nurse passed their final examination. The third Staffordshire hospital at *Cheddleton* had 1107 patients in residence on Dec. 31st, 1928, a reduction of 27, due to boarding out under contract. There are 20 more women than the statutory number, but 21 male vacancies. Patients boarded out included many of the best workers, so that Cheddleton work has suffered. The medical superintendent points out that the provision of colonies for chronic cases, and the early discharge of convalescents, will materially increase the cost of running a mental hospital. General paralysis was treated by malaria, and four cases were discharged during the year. Five patients were known to be suffering from tuberculosis on admission. There were 38 cases of dysentery, three more than last year, but fewer of them were unexplained. Only three cases of encephalitis lethargica were admitted during 1928, bringing the total in residence to 26. Ten cases were treated, without benefit, with malarial blood, and ten were given tincture of stramonium, which gave temporary improvement in all cases. A ward has been arranged for training lads who have got beyond the control of nurses. They are taught tailoring, cobbling, gardening, drilling, handicrafts, and games, and the experiment seems likely to be very successful. The orthopædic department has been very successful in improving the deformities and habits of low-grade congenital cases. The usual statistics are not supplied in this report. In March, 1928, the visiting commissioners found 56 men and 36 women on parole beyond the estate, 30 men and four women on more limited parole, and three wards administered on the open-door system. They note that 26 per cent. of the female and 60 per cent. of the male nurses are certificated or registered; an orthopædic sister attends twice a week, an electrotherapeutic sister attends regularly, and a schoolmistress teaches the children for four hours daily.

At *Winson Green* there were 812 patients on Dec. 31st, 1928. The recovery-rate was 45·2 per cent., and 44 of the 83 patients discharged had a month's preliminary trial, 33 of them with financial assistance. The death-rate was 7·7 per cent., and post-mortem examinations were made in 95 per cent. The general

health was good; there was no infectious disease, except two cases of erysipelas and three of tuberculosis. The treatment of focal sepsis gave most encouraging results. Protein therapy was found beneficial, especially after operation had converted a closed sepsis into an open one. Eight male and two female general paralytics were treated by induced malaria. One man and one woman were discharged apparently in normal health, and one man died. Six dementia præcox patients were inoculated without benefit. Weekly entertainments are given, and every ward has a gramophone, and is being fitted with a loud speaker. Both male and female reception wards have been fitted with verandahs. The R.M.P.A. certificate is now held by 78·1 per cent. of the attendants and 41 per cent. of the nurses.

At *Rubery Hill and Hollymoor* there were 1869 patients on Dec. 31st, 1928. The recovery-rate was 42·2 per cent. and the death-rate 6·44 per cent. Autopsies were carried out in 59·2 per cent. of the cases. General paralysis was treated by induced malaria, typhoid-paratyphoid vaccine, and chemotherapy, including tryparsamide, and three cases have been discharged recovered. Nasal sinusitis was suspected in 151 cases, and proved in 116—i.e., 33 per cent. of the total admissions. A very large number of other causes of toxæmia were suspected, and the principal aim of treatment here is to combat this toxæmia, generally without any coöperation from the patient. Only three cases of tuberculosis were recorded at the end of the year, and there was no other infectious disease. Cinematograph entertainments were given regularly and much appreciated. The dairy herd was twice tested for tuberculosis. During the year 18 attendants and 17 nurses obtained their R.M.P.A. certificate, bringing the totals to 93 and 61 respectively, while 14 attendants and 26 nurses were registered by the General Nursing Council.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 26TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 131 (last week 154); scarlet fever, 3504; diphtheria, 1709; enteric fever, 141 (last week 140); pneumonia, 1008; puerperal fever, 58; puerperal pyrexia, 94; cerebro-spinal fever, 11; acute poliomyelitis, 30; acute polio-encephalitis, 2; encephalitis lethargica, 11; dysentery, 17; ophthalmia neonatorum, 104. No case of cholera, plague, or typhus fever was notified during the week.

Of the notifications of enteric fever, 41 were received from the County of London—namely, one each from Camberwell, Hammersmith, Islington, St. Marylebone, St. Pancras and Wandsworth, and 35 from Lewisham. Of the 14 notifications from Kent, 8 came from Beckenham and 2 from Penge.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Oct. 29th–30th was as follows:—Small-pox, 172 under treatment, 12 under observation (last week 163 and 9 respectively); scarlet fever, 2657; diphtheria, 2364; enteric fever, 90 (last week 69); measles, 231; whooping-cough, 125; puerperal fever, 22 (plus 12 babies); encephalitis lethargica, 125; poliomyelitis, 9; "other diseases," 19. At St. Margaret's Hospital there were 16 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 6 (3) from enteric fever, 14 (4) from measles, 11 (0) from scarlet fever, 12 (2) from whooping-cough, 51 (11) from diphtheria, 102 (19) from diarrhœa and enteritis under two years, and 56 (15) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London were reported from Liverpool, Darlington, and Merthyr Tydfil. In spite of the decline of diarrhœa generally Liverpool reported 22 fatal cases, Birmingham 8, and West Ham 5.

The number of stillbirths notified during the week was 264 (corresponding to a rate of 41 per 1000 births) including 45 in London.

THE HANDLING AND STORING OF CELLULOID X RAY FILMS.

THE British X Ray and Radium Protection Committee have now amplified their preliminary suggestions for the handling and storing of celluloid X ray films, which were made in our correspondence columns after the Cleveland disaster.[1] They point out that the X ray films of cellulose nitrate in common use burn with rapidity and violence when ignited. The burning of cellulose nitrate in bulk is well-nigh explosive in character. In addition, large quantities of carbon monoxide and brown fumes of oxide of nitrogen may be generated, both of which are highly toxic, and indeed led to a heavy death-roll in the Cleveland clinic fire. Carbon monoxide is itself inflammable and when mixed with air may give rise to an explosion; celluloid will burn in the absence of air.

Recommendations.

Regulations on the handling and storing of celluloid have been issued by the Home Office, local authorities, and others. The Protection Committee make the following recommendations.

X Ray Rooms.

In all rooms where X ray films are handled and stored *naked lights and open fires* should be prohibited. Smoking should be prohibited in or near film cabinets or film stores. Films should not be placed near steam pipes, radiators or the like. A ready supply of fire extinguishers together with buckets of water and sand should be available. The best means of extinguishing burning celluloid appears to be by the application of water.

Electric light installations should be of a permanent character. Electric light bulbs in or near film stores or cabinets should be enclosed in strong glass globes.

Generous ventilation should be provided in X ray rooms. As recommended in paragraph 5 of the International Protection Recommendations, the plan of an independent exhaust fan in each room is to be preferred to a duct system common to a number of rooms. Doors should be arranged to open outwards, particularly from film-drying rooms and dark rooms.

The *stock of X ray films*, whether unexposed or developed, should be kept down to the minimum. The stock of film records should be subjected to periodical drastic weeding out. Discarded films should be at once deposited in strong fire-proof metal containers with self-closing lids and destroyed at frequent intervals. They should not be placed in general refuse bins, or burnt in a closed vessel.

Stocks of unexposed films for immediate use or current files of developed films should be stored in cool and dry lock-up thermally insulated metal or hard wood cabinets. Such a stock should not exceed a total of about 50 lb.—i.e., about 1000 12 in. by 10 in. films—distributed among several cabinets. Cabinets for unexposed films should be lead lined. *Developed films*, which are temporarily taken into hospital wards or theatres for the convenience of the medical staff, should not be left lying about in table drawers or cupboards, but should be kept in suitable metal containers. Such films should be returned to the X ray department as soon as possible.

Film Stores.

Stocks of film exceeding about 50 lb. should not be stored in the X ray department, but in a special dry, cool, and well-ventilated room reserved exclusively for the purpose. The main requirements of such a room are as follows:

(*a*) The situation of the film store should not be such as to endanger the means of escape from any part of a building. The store should not be in the proximity of a lift-shaft or staircase-well, or near an intake or outlet of a general duct-ventilating system. In no circumstances should the store communicate with a general duct-ventilating system. The store should preferably be an isolated single-storey building with independent access. Failing that, it may be placed on the roof of a building or, if that is not feasible, in one of the higher storeys in as isolated a position as possible.

(*b*) The walls, floor and ceiling of the store room should be fireproof and of robust construction. The door should be fireproof and of a self-closing, closely fitting type. If the store room forms part of a main building, a useful further precaution is a fireproof vestibule with a second fireproof door.

[1] THE LANCET, 1929, i., 1223.

(*c*) The store should be provided with a direct vent to the outer air, preferably on the side remote from the most adjacent building. Such a vent should not normally be less than a square foot in effective area, a figure which may require to be exceeded for large stores. The vent may be protected against weather, &c., by thin unwired glass or other equally frail device.

(*d*) A film store may well be equipped with steel cabinets. If the store is designed to carry unusually large stocks of films (exceeding, say, 1 ton), it should be divided into completely isolated fireproof compartments each with its own vent and fireproof door.

(*e*) The temperature of the store should be maintained at a moderate figure. If the roof is exposed to the sun, suitable thermal lagging may be necessary in hot climates. It seems certain that good quality celluloid does not ignite spontaneously at any temperature attained under ordinary room conditions.

(*f*) The store should be equipped with an automatic water sprinkler device.

(*g*) If windows are provided in a film store, they are best situated in a north wall, though other considerations may be more important. Any windows immediately above the windows or vent of the store room should be provided with wired glass.

The committee, of whom Sir Humphry Rolleston is president, record their view that the production and use in this country of satisfactory "safety" X ray films should be encouraged.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Australasian Medical Congress.

THE third session of the Australasian Medical Congress (British Medical Association) was held in Sydney at the beginning of September under the presidency of Dr. G. H. Abbott. Over 900 people attended, including about 350 visitors from other States and from overseas, including Sir Ewen Maclean, Sir Louis Barnett, Dame Janet Campbell, and Prof. Hugh MacLean. The inaugural meeting was held at the Town Hall, Sydney, when Lord Stonehaven, Governor-General of the Commonwealth, opened the proceedings. At the first session in the Great Hall of the University speakers from each of the States and from New Zealand gave an account of

What is Being Done in Australasia Towards Cancer Research.

In the course of the discussion Dr. F. P. Sandes, Director of Treatment in the Cancer Research Department of Sydney University, said that the University had just completed a radium emanation station for the assistance of practitioners in outlying places. He urged that the treatment of cancer by X rays and radium should be vigorously encouraged, and pointed out that the greatest difficulty lay not in getting money but in finding men with sufficient originality of mind and method to take up cancer research. Under present conditions, the students who were prepared to devote their talents and their life to research were offered less than a tradesman's income. Dr. Peter MacCallum, professor of pathology in Melbourne University, said that the statistical and experimental research on the relationship between tuberculosis and cancer in mice, which was begun by Dr. Thomas Cherry some three years ago at the Walter and Eliza Hall Institute, had already given remarkable results. He described the work now being done at this institute and at Melbourne Hospital, the Baker Institute, and the Alfred Hospital. At the Commonwealth laboratories, said Prof. MacCallum, Dr. Hirst and Miss Doery were carrying on research on the nature of metabolism of cancerous growths and had so far confirmed the work of Warburg. Dr. E. Sandford Jackson reported that lead treatment in various forms had been given a considerable trial in a number of cases in Queensland, but had now fallen into disuse. Treatment by radium was making progress, and since the Commonwealth radium had become available in Queensland hospitals radium therapy had overshadowed every other kind of treatment. The present tendency, he said, seemed to be to put the radium under the control of small coteries of medical men, and this system was to be deplored. It was important that a whole-time paid director should be appointed to each State and that there should be an attempt in research into the causation of cancer under Australian conditions. Dr. A. A. Lendon stated that a deep X ray therapy plant would shortly be installed at the Adelaide Hospital. At present this form of treatment was being carried out privately on hospital cases with encouraging results. The organisation of the radium clinic at Adelaide was not yet complete. Dr. Bronhall in a communication described the position in Western Australia. As there was at present no medical school in Perth very little experimental work was being carried out except privately, but the treatment by radium was now being freely used. The Federal Government had recently offered the sum of £5000 to establish a cancer fund, and £18,000 had already been raised. It was intended to build a department at the Perth Hospital which would include X ray rooms and deep ray treatment rooms. Sir Louis Barnett said that in New Zealand investigations of cancer, through the hospitals, had been commenced 15 years ago. For very many years the cause of cancer had been unsuccessfully sought, and he suggested that investigation of ætiology was not the only line of research that should be followed. It was necessary to explain to the public that, while the cause of cancer was being sought, attempts were also being made to secure better and more effective treatment. Dr. Burrows, of the Commonwealth Department of Public Health, told how for several years the Commonwealth Government had been endeavouring to foster cancer research and treatment in Australia. Subsidies amounting to £13,200 had been paid since 1924. The two most important problems were to find means of securing early diagnosis of cancer and of affording every member of the community an opportunity to obtain the latest and most up-to-date forms of treatment. The purchase of radium by the Commonwealth Government had tended to focus interest in treatment and research which had been steadily growing in Australia. The object of the Government was to provide a national system by which every member of the community could obtain cancer treatment of the highest class. Skilled surgical treatment was already available. What was necessary was the provision of other services. Dr. L. M. McKillop, of Brisbane, speaking on the prevention of cancer, said that medical men, as a profession, were not doing what they should towards prevention. Dr. J. L. Jona, of Melbourne, made an urgent plea for the creation of a central medical research council for the coördination of the work now proceeding all over the Commonwealth. He pointed out that under the present condition men who were making investigations in one State might not know what was being done elsewhere.

Radiation and Living Cells.

Prof. H. G. Chapman, Director of Cancer Research in Sydney, said that during the last five years a team of investigators had gathered in Sydney to learn more about the action of radiation on living matter. The study had mainly been confined to the action of X rays. The experiments of Dr. W. Moppett had shown that a beam of rays of so few adjacent wavelengths as to be termed homogeneous, might be as active as a mixed beam several thousand times as powerful physically. He had noted that some wavelengths caused atrophy of the cells of the chorio-allantoic membrane of the chick embryo, whilst others produced hypertrophy; other wave-lengths of the same intensity appeared to be without any biological activity. Further, the simultaneous application of beams of radiation with antagonistic action on tissues led to no biological effect on the membrane. It had been shown that several homogeneous beams of rays were potent biologically. The physicists in the

Sydney team had observed these wave-lengths to be the discontinuities in the adsorption of rays by lead, uranium, and molybdenum. Chemical analyses had shown lead and uranium to be present in the eggs used in these researches. It thus appeared that there was evidence that the heavy metals produced an exceptional adsorption of radiations of certain wave-lengths. Whether this adsorption was connected with the biological results remained to be seen. A study had been begun to ascertain whether the properties of lead as a catalytic agent were altered by the adsorption of X rays. Attention had been directed in Sydney to the way in which radium brought about the disappearance of new growths, and it seemed that immunological processes were concerned. Research had been undertaken to ascertain whether immunisation could be produced in the human subject by injection of proteins of tumours. Evidence was accumulating that antibodies might be produced against the proteins of the multiple melanotic sarcomata of man.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Royal Society of Edinburgh.

Sir Edward Sharpey-Schafer, the physiologist, has succeeded Sir Alfred Ewing, the physicist, as President of the Royal Society. In his retiring address Sir Alfred gave a masterly sketch of the progress of science in the 57 years of his experience, and emphasised the strong drift now manifest from physics to biology. He almost seemed to suggest that, for the time being, physics may be regarded as a series of extinct volcanoes, while biology shows an immense continent for exploration. But it is to be remembered that Einstein and Eddington are still young, while J. J. Thomson, Rutherford, and their many distinguished pupils are still with us. The quantum theory as well as general relativity have yet to be made intelligible and brought into coherence with one another, and with the ordinary experiences of life. The urgent problem for the physicist is to project an atom that will be identically the same for living matter as it is for dead matter, and on that problem some mathematical physicists are actively engaged. But unquestionably the interest in biology is growing every year. Sir Edward Sharpey-Schafer is not only a distinguished physiologist, but the symbol of a great biological movement.

Animal Breeding Department.

The work of this department, under Prof. F. A. E. Crew, is at last persuading practical breeders and farmers that research yields results of outstanding importance, and that science is a genuine guide to stock-rearing and stock selection. Recognition of this is seen in a gift to the department of £30,000 by Mr. T. B. Macaulay, president and managing director of the Sun Life Assurance Company of Canada. The wealthy corporation over which he presides has before now shown itself mindful of pioneer scientific effort. Mr. Macaulay, whose father was a Lewis man, recently presented a new wing, fully endowed, to the Lewis Hospital. The department has also received a similar gift of £30,000 from the Rockefeller International Board, and £10,000 from Lord Woolavington.

A Children's Ward for Nose and Throat Cases.

A special ward of 12 beds for the treatment of ear, throat and nose cases has been added to the Royal Edinburgh Hospital for Sick Children. This brings the total beds to 132. The new ward unit includes a properly fitted doctor's room, where minor operations and dressings can be done. About 1000 operations annually are performed in the hospital for adenoids and tonsils, and in 1927 50 mastoids were treated. The number of new patients attending this department rose from 767 in 1927 to 1200 in 1928, and the ward will make it possible to take in for short periods a much larger number than hitherto. Many adenoid and tonsil cases require indoor care after operation, and to send them home direct from the out-patient department is often very undesirable. In accepting the care of the ward Dr. Douglas Guthrie, who has been aural surgeon to the hospital since 1919, described the ward as a notable addition which would certainly prove a real boon to the patients.

The Medico-Chirurgical Society.

At a meeting of the Medico-Chirurgical Society of Edinburgh on Oct. 30th new officers were elected to fill the vacancies caused by the annual retirements. The office-bearers for the coming year are as follows :—

President : Prof. G. Lovell Gulland. Vice-Presidents : Dr. R. A. Fleming, Mr. J. W. Dowden, and Dr. E. F. Armour. Councillors : Dr. Charles McNeil, Dr. Andrew Ritchie, Dr. Murray Wood, Mr. J. W. Struthers, Dr. C. W. Somerville, Dr. W. Fordyce, Dr. H. G. Langwill, and Dr. Alex. Goodall. Treasurer : Dr. Macrae Taylor. Secretaries : Mr. A. Pirie Watson and Dr. H. L. Watson Wemyss. Editor of Transactions : Dr. Fergus Hewat.

PUBLIC MENTAL HOSPITALS.

SCIENTIFIC AND RESEARCH WORK.

THE first part of the Fifteenth Annual Report of the Board of Control, which we reviewed in a leading article [1] some weeks ago, deals with the administrative work of the public mental hospitals. The second part of the Board's report [2] contains, in addition to the entries of the Commissioners at the various hospitals and some statistical tables, the reports of the research carried out at the institutions throughout the country.

At *Birmingham*, as in previous years, work has centred round chronic infections, especially of the nasal sinuses and intestinal tract, and an attempt is being made to correlate the findings with disturbance of the pituitary gland, endocrine imbalance, and local damage to brain tissue. A chronic infective process has been found in a large proportion of cases, and in some it has been possible to trace it back to an acute infection such as measles, influenza, or scarlet fever. The areas of unresolved residual infection start a long chain of physical, and ultimately of mental symptoms. The relationship of actinotherapy to focal sepsis has been investigated ; it appears that ultra-violet light causes an exacerbation reaction in "closed sepsis," and a healing reaction with diminution of symptoms in "open" or opened sepsis. An inquiry into the relation of mental symptoms to phases of the reproductive cycle has revealed a "menstrual reaction," or intensification of conduct disturbance during the premenstrual and menstrual phases, and a "moliminal reaction" or similar periodic intensification during the amenorrhœa of mentally disordered patients. The appearance of these reactions indicates that an ovary is still functioning, although it may be a diseased one. Bacteria have been found to pass from a diseased sphenoidal sinus to the pituitary gland, and it is believed that signs of pituitary disorder may be set up by a closed sepsis of this kind. An investigation into the Wassermann and Widal reactions of 176 mentally defective children at the Monyhull Colony has suggested an ætiological relationship between mental defect and gastro-intestinal infection in early life. Only 3 per cent. gave a positive Wassermann reaction.

At the *Cardiff City Mental Hospital* an inquiry is being made into the possible ætiological significance of a filtrable virus in dementia præcox. Work on

[1] THE LANCET, Oct. 5th, p. 719.
[2] H.M. Stationery Office. Pp. 360. 9s.

blood-cholesterol has been published in THE LANCET (Feb. 23rd, 1929) and tends to show that the blood-cholesterol is a little lower in the pre-paroxysmal than in the paroxysmal phase of epilepsy, but shows only slight changes with the menstrual cycle. Work on the hydrogen-ion concentration of the blood and urine is being continued.

The *West Riding Mental Hospital* at *Wakefield* investigated a number of cases of dysentery; at *Wadsley*, Sheffield, malarial treatment was tried for three cases of dementia præcox, one of which showed steady improvement. Eight others were treated with hormone extracts, and two of them improved enough for discharge. There are a number of post-encephalitic cases in the hospital, and these are being investigated. Some benefit has been obtained in parkinsonism from a daily morning injection of hyoscin followed by two oral doses of stramonium in the afternoon and evening. At the *Storthes Hall Hospital*, *Kirkburton*, the Meinicke turbidity reaction was tried and found to be a valuable auxiliary to the Wassermann reaction, rapidly and easily carried out.

Of the *Lancashire Mental Hospitals*, that at *Lancaster* was occupied with an intensive antityphoid campaign, as sporadic outbreaks had occurred in the two previous years. Eight carriers were identified and no further cases have occurred. Malaria treatment is followed up by tryparsamide in general paralysis, and the relationship between the malaria infection and the cytological formulæ of the blood have been studied. The effects of ultra-violet light have been noted; the best results are obtained in debilitated patients who refuse food, and in stuporose melancholics. Schnee baths have been found useful for rheumatoid arthritis, sprains, and synovitis, as well as in the after-treatment of fractures, and as a general tonic in muscular affections. At *Prestwich* the malarial treatment has been studied. At *Rainhill* a number of cases of encephalitis have been examined bacteriologically and treated with autogenous vaccines. Cases of general paralysis have been followed up, and the conclusions arrived at are that malarial treatment alone is as effective as malaria followed by tryparsamide, but that tryparsamide acts as a general physical tonic and allays motor restlessness so that the pyrexial attack is less dangerous. It is, however, apt to cause serious complications, especially visual and hepatic disturbance, and must be given cautiously and controlled by the lævulose test and van den Bergh reaction. No case has been completely cured, if cure be taken to mean complete remission of mental symptoms, serological changes, and physical signs. Dr. C. M. Bamford calls attention to a special acute type of dementia præcox, characterised by restlessness, confusion and impulsiveness, lasting for a few months, with very intense physical deterioration, no tendency to remission, and early death. In all the cases examined post mortem he has found a large macrocephalic brain with a complex convolutional pattern, a marked fibrosis of all the solid viscera, especially the liver, kidneys, and ductless glands, and an infantile cardiovascular system. At *Whittingham* the Kafka paraffin reaction of the cerebro-spinal fluid has been found to agree in almost every case of general paralysis with the Lange gold and colloidal gamboge tests, but not to show meningitic curves. Tubercle bacilli have been demonstrated in the fæces in unexpected cases by the Ligroin and Zeihl-Neillson methods. It has been assumed that puerperal insanity is of two types: melancholia produced by pressure of the uterus on the splanchnic nerves, causing increased blood pressure, and mania due to a toxic factor producing cerebral irritation. Corresponding treatment has given good results; in mania a binder over several layers of towelling is applied, with the aim of increasing arterial pressure by increasing abdominal pressure. The Boltz test has been tried on 346 cases; it is only positive in general paralysis and does not always agree with the globulin test, nor is its absence a reliable indication of the absence of general paralysis. It tends to change after malarial treatment, but not as often or as rapidly as the globulin test.

The *London County Mental Hospital* at *Banstead* submits a report on the treatment of general paralysis with relapsing fever, saprovitan and milk injections. None of them was quite as good as malaria, and saprovitan was distinctly disappointing. It seems probable that the milk reaction is due to incomplete sterilisation and not to a genuine protein reaction. Malarial treatment is also being investigated at *Bexley*. At *Claybury* the Meinicke micro-reaction in the serum and the hydrogen-ion concentration in the urine have been investigated. Malaria has been tried in idiopathic epilepsy, but apparently only causes temporary benefit. At *Horton* ultra-violet light was found most useful in toxic cases and melancholias associated with the menopause. Malarial treatment here is made the subject of intensive research and not given as a routine only; a quartan strain is being tested. At *West Park* the oculogyric crises of encephalitis have been studied; suggestion seems the most potent factor in shortening or preventing attacks. Interference with normal cortical control accounts for the increased suggestibility of these patients, as well as for the release phenomena of different subcortical centres, causing tonic fits, ocular spasms, respiratory crises, myoclonias, emotional facility, and paradoxical reactions. A large proportion of the encephalitics who suffer from oculogyric crises subsequently require certification. The ætiology of alcoholism has been investigated at the *Maudsley Hospital* and attention drawn to the fact that we know almost nothing of the anatomical and biochemical basis of the euphoric and narcotic effects of alcohol, of addiction and distaste, and of susceptibility and immunity. Tryparsamide has been found valuable for general paralysis, but its action was enhanced by combination with malaria. The sedimentation velocity of erythrocytes in the psychoses has been studied but found of no diagnostic value except in recognising pulmonary tuberculosis in cases where the patient cannot give intelligent coöperation. The *Central Laboratory* of the London Mental Hospitals has continued its work on the pathology of schizophrenia and the histology of general paralysis. It has been found that the primary disturbance in the former lies in the inexcitability of the respiratory centre, a condition closely resembling that of normal sleep. The acid-base equilibrium was found in every way similar to that of a normal sleeping man. The absence of spirochætes in the brains of general paralytics after malarial treatment has been confirmed by numerous examinations. The stretch reflexes have been studied and work has been done on the relation of muscle tension to mental effort.

Research into the relation of mental disorders and the menstrual cycle is being continued at the *Cheshire County Mental Hospital* at *Chester*. Amenorrhœa has been found in one case in seven and dysmenorrhœa in one case in five of established psychosis, while a high percentage of epileptics show pre-menstrual or menstrual grouping of the fits. At *Macclesfield* light therapy has been investigated and also the liability to suicide in various psychoses. Suicide seems to depend on a faulty physical inheritance, in which endocrine malformation is a prominent factor.

At the *East Sussex County Mental Hospital* the Kahn test has been found less reliable than the Wassermann and the urochromogen test for tuberculosis was found very unreliable. Minchin's technique for identifying tuberculous yeasts is being tried and the acidophilus and streptococcal contents of the intestine have been investigated; acidophilus protection seems to be markedly deficient in mental patients.

At the *Dorset County Mental Hospital* a search for typhoid carriers and a leucocyte study has been carried out. The Meinicke micro-reaction, the Takata-Ara colloidal reaction, Buscaino's black reaction, and Scheiner's reaction are being investigated.

At the *Croydon Borough Mental Hospital* Kahn's test has been found simpler and more reliable than the

Wassermann reaction. In a few cases of epilepsy ephedrine has been found more efficacious than luminal or bromides, and glucose has been found an invaluable adjunct to the treatment of asthenic cases. The sedimentation-rate of the erythrocytes has been studied; it is markedly increased in pulmonary tuberculosis, carcinoma, salpingitis, and diabetes mellitus. Ultra-violet light, although useful for skin disease, has not caused any improvement in mental cases.

The Vernes tests are being investigated at the *Leicester City Mental Hospital*. A number of cases of dysentery were studied during the year and general paralytics were treated with malaria.

St. Andrew's Hospital, Northampton, puts all its patients through a routine scheme of research and various forms of hydrotherapy have been studied. A detailed examination is being made of the bacteriology of the stomach and intestine. At *Wonford House, Exeter*. the hæmatopoietic tissues have been found to be functionally impaired in general paralysis; they are unaffected in non-paretic syphilis. Consequently an infection calling for polymorphonuclear leucocytosis will flood the blood of a paretic with immature leucocytes. The depression of leucopoietic activity is thought to account for the ease with which bedsores are developed and the liability to intercurrent infection. It is suggested that it is futile to over-stimulate an exhausted system, and that pyrexial treatment should only be used when stimulation of the leucogenic functions is likely to be successful—i.e., at the earliest stage or as a preventive routine measure in the secondary or tertiary stages of syphilis. Pyrexial treatment given to a patient with a poor leucocytic response only hastened the paresis.

This brief summary by no means covers all the scientific work undertaken at the mental hospitals. It takes no account of the articles sent to medical journals and papers read at meetings of the Royal Medico-Psychological Association. When it is realised that most of this work is done in remote country places, often far removed from the encouragement of contact with other workers and without the stimulus of team enthusiasm, the record is highly encouraging. It is true that there are more than a hundred mental hospitals and many of them are silent on research, but the printed reports are enough to show that the scientific spirit is alive in the mental hospital service, and we are happy to call attention to it.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. N. A. H. Barlow to be Surg. Comdr.

ROYAL ARMY MEDICAL CORPS.

Maj. H. F. Joynt retires on retd. pay.

ARMY DENTAL CORPS.

Lt. E. C. Browne, temp. Dental Surg., Gen. List, to be Lt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. A. R. C. Parsons having attained the age-limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL FORCE.

Capt. E. R. Lovell to be Maj.

ROYAL AIR FORCE.

J. G. Skeet is granted a temporary commission as a Flight Lt.

Flying Officer J. J. MacAndrews resigns his short service commission.

Flying Officer H. D. Humphreys is promoted to the rank of Flight Lt. (Dental) on promotion to the rank of Captain in the Army Dental Corps.

INDIAN MEDICAL SERVICE.

Lt.-Col. (Bt. Col.) W. H. Leonard to be Col.

Temp. Lt. Sat Chit Anand relinquishes his temp. commn.

Correspondence.

"Audi alteram partem."

JAMES BLACK'S DESCRIPTION OF CONTRACTILITY OF CAPILLARIES (1825).

To the Editor of THE LANCET.

SIR,—In the second edition of Krogh's monograph on the capillaries, which you reviewed last week, attention is drawn to a group of investigations on the contractility of the capillaries carried out early in the nineteenth century. Mention is made of Wilson Philip's studies, and also of those of Johannes Müller, who sought evidence for or against the existence of peripheral propulsive agents which might assist the heart in overcoming the peripheral resistance. Krogh, however, and also Lewis, fail to mention the interesting study of James Black (1788?–1867), who, in 1825, published in London a book of 176 pages, entitled "A Short Inquiry into the Capillary Circulation of the Blood; with a Comparative View of the More Intimate Nature of Inflammation." Black described in no uncertain terms the phenomenon now referred to as the "red reaction," and he observed beyond any possibility of doubt the independent contractility of the capillaries. The following protocols of two of his experiments, which occur on pp. 54 and 55 of his book, will serve to indicate the nature of his observations.

"*Exp. 4. On a frog.*—The natural circulation of the arteries in the web almost invisible, and without any red colour; but as soon as it was discovered, it was observed to circulate with considerable velocity, and the globules were not easily to be traced. Extension and gentle fastening of the foot even by the fingers increased the flow of blood, and soon filled many of the colourless vessels with red globules. The application of Aq. Ammon., and more particularly of the salt solution, soon rendered the whole capillaries visible and of double their former diameters; the circulation becoming slower, and congestion following in the veins, and lastly in the arteries. The brain was crushed, and the circulation observed in the foot previously unexperimented upon. The vessels sooner than before became more visible, the circulation also became retarded, and congestion took place in the order of vessels as before remarked; but the circulation continued 20 minutes after the injury of the brain, and, lastly, the blood slowly retired from the smaller vessels of all descriptions, and left the web pale and flaccid."

"*Exp. 5. The web of a young duck's foot was made the subject of this experiment.*—The veins, in beautiful branches, were easily seen by a common magnifying glass, but the arteries were only visible after some stimulation. The web could not be rendered transparent enough to see the red globules by the microscope. Aq. Ammon. was applied to both sides of one of the divisions of the foot; in two to four minutes great contraction took place in the large vessels; so much so, that many branches were rendered invisible, and others appeared like the finest hairs, which, before in their natural state, seemed three times the diameter. It was not a mere recession of the blood, for the line of the larger vessels was very distinctly contracted and well defined. After the space of about four minutes, all the vessels acquired their former natural diameters, and still further enlarged to complete phlogosis of the part, or to what may be termed inflammation. A fresh application of Aq. Ammon. produced a fresh contraction, but it was not near so complete as the former. The other foot was treated with a saturated solution of Mur. Sodæ, which application was soon followed by great enlargement of the vessels, especially of the larger veins in the web, which seemed much congested, until bathed on both sides with Aq. Ammon. when after five minutes general contraction was produced, and many of the small vessels were rendered invisible. During the above experiment the animal scarcely struggled."

On the basis of these and other observations Black draws 12 carefully worded conclusions, several of which may be given in his own words.

"*Third.*—The healthy and natural circulation in the capillaries depends, directly, on a tonic or *tensive* state of their delicate tubes; and immediately, on some power inherent in the part, a degree of which power seems to reside in the blood equally with the vessels, and its energy depends more on the integrity or vitality of the part or parts of this system than upon any impulse derived from the heart."

"*Fifth.*—A strong stimulus suddenly applied, in a short time, produces a contraction of all the fibres of the part and a diminution of the diameters of the whole classes of vessels, but more particularly of the arteries, which is followed, at a greater or less distance of time, by a corresponding dilatation—according to the extent of which, the phenomena of inflammation will be more or less observable; and more so, if the *vis a tergo* be powerful or stimulated."

"*Sixth.*—A gentle or lesser stimulus produces an evanescent contraction, followed by relaxation, increased redness, and a slight acceleration of blood in the *leading* capillary arteries and veins; owing, it seems, to the increased capacity of the distended reticular vessels, while the former are yet relatively contracted."

"*Seventh.*—The circulation in the capillary system is independent of the controul [sic] of the heart, except so far as this organ affords a constant pressure and a ready supply of blood, upon which the capillary vessels may act; and it is still more independent of the brain."

"*Tenth.*—The condition of a part, in what is termed inflammation, is essentially seated in the capillary vessels, and primarily and chiefly in those of the veins."

Black then points out that his observations are in sharp contradiction to the conclusions of Haller (1766) that the capillaries were passive agents, whose diameter depended only upon the pressure of blood passing in them. The author considered the possibility that the capillaries may act as peripheral hearts, but draws no definite conclusion. In discussing the structure of the capillaries, he says, "the muscular or elastic tunic of the larger arteries, about which there has been so much controversy, is either lost in the capillary tissue or is so entirely attenuated that it is incapable of demonstration, even by the aid of a strong microscope."

Black records (p. 50), that his observations "were instituted in the summer of 1822. They would have been prosecuted to a much greater extent if an amaurotic affection of one eye of the experimenter had not made its appearance during these and some other optical pursuits." He was born in Scotland, and was admitted a Licentiate of the Edinburgh Royal College of Surgeons in 1808 and M.D. of Glasgow in 1820. From 1810 to 1839 he practised at Bolton, and then moved for ten years to Manchester. In addition to his medical writings, which were numerous, he contributed several papers on geology and Roman archæology to the Manchester Philosophical Society.

I am, Sir, yours faithfully,

J. F. FULTON.

Magdalen College, Oxford, Oct. 15th, 1929.

PS.—Since writing this letter I have come upon a work of Marshall Hall entitled "A Critical and Experimental Essay on the Circulation of the Blood, especially as observed in the Minute and Capillary Vessels of the Batrachia and of Fishes" (London: 1831, 187 pp., 10 plates). The anatomical distinction between arterioles and capillaries is here clearly set forth, but the writer was unable to detect independent contraction of capillary vessels, and he concludes that "every fact relative to the capillary circulation leads us to ascribe its various phenomena to forces impressed upon it from without," and "there is nothing of satisfactory evidence or argument for an automatic power in them" (p. 90). Marshall Hall exerted a powerful influence upon contemporary physiological thought and his conclusions were undoubtedly responsible for the scant attention which the observations of Black and Wilson Philip received. —J. F. F.

TANNIC ACID FOR BURNS.

To the Editor of THE LANCET.

SIR,—The results of a questionaire sent out to various hospitals and authorities have been considered by the medical advisory committee of the Industrial Welfare Society. The consensus of opinion shows that, although it has been proved to be of considerable value, especially in hospitals, it should be used only under medical supervision and not as a first-aid application for burns by the general public or ambulance attendants. Nor in the nursery, owing to the complicated character of the treatment, and the extremely poisonous nature of the corrosive sublimate suggested to be used with the tannic acid.

I am, Sir, yours faithfully,

D. A. COLES,
Chairman, Medical Advisory Committee of the Industrial Welfare Society.

51, Palace-street, Westminster, S.W. 1, Nov. 1st, 1929.

THE DIAGNOSIS OF LARYNGEAL CANCER.

To the Editor of THE LANCET.

SIR,—Sir James Dundas-Grant has mentioned my name. May I reply? The battle of the biopsies will be fought by laryngologists as long as that of white and brown bread by dietitians, but the recent discussion and a subsequent correspondence with Sir James has suggested to me a classification that may prevent our talking at cross-purposes.

Class A.—The removal of a piece of the primary lesion by an endolaryngeal method: (1) when any subsequent operative treatment will be a laryngectomy or pharyngectomy; (2) when any subsequent operative treatment will be a laryngo-fissure or the making of a window in the thyroid cartilage for the insertion of radium.

Class B.—The removal of a lymph gland for evidence of secondary involvement.

In *Class A* (1) I will agree that a biopsy may be made before submitting the patient to an operation of such a magnitude. In such cases the growth is extrinsic or if primarily intrinsic is becoming secondarily extrinsic. Further, it is large. For these two reasons it is probable that the piece removed will be large enough and central enough to produce a section from which a certain diagnosis may be made.

It is in *Class A* (2) that the difference of opinion prevails. I belong to the school that would make the diagnosis by clinical observation, by waiting and watching, and the exclusion of other diseases by general medical and by bacteriological and serological investigations. In my opinion it is wrong to attempt a biopsy in these cases. The growth is intrinsic and limited to the cord, and it is small. Therefore there is a chance that the piece removed will be small and from the periphery with the result that the section may not enable a definite decision to be made. The diagnostician is then in a worse position than before; he must fall back upon the policy of waiting and watching, but under great difficulties. The wound must first heal, and when it has healed the observer cannot be sure what part of the change from the original picture is due to the trauma, and what part is due to an extension of the disease.

Further, in both cancer and tuberculosis the removal of a piece may do harm. In cancer it may result in a rapid extension of the growth so that it passes from the stage where the relatively minor operation of laryngo-fissure must be replaced by the major one of laryngectomy. In tuberculosis it is equally harmful. To call the operation of laryngo-fissure "life-endangering" in tuberculosis may be correct; but one cannot deny the science epithet to the removal of a piece for microscopical section.

A study of the cases recorded at the last meeting of our section bears out this view. Sir James showed microscopical sections of two cases. In each they confirmed that which he had made. In his second case the patient was referred to him as one of tuberculosis, and I infer that he took a piece for microscopical section because he disagreed with this. In the third case the patient was sent to him with the diagnosis of growth and he thought it tubercle. Again, the section proved him to be right. In neither case therefore did the sections help him in his diagnosis; they merely gave him pathological support in his difference of opinion with others. He produced no section in which his clinical diagnosis was proven wrong and by which he was saved from calamity. Against biopsy we have Dr. Andrew Wyllie's case (*Proceedings*, 1929, p. 72) where the microscopist was wrong, and Dr. Jobson Horne's case (*Proc.*, p. 68) where even after operation the opinions of microscopists

varied. To these we may add the classica case of the Emperor Frederick and similar cases where the microscopical evidence from the part removed has been inconclusive and has led to delay and a terrible suspense. The only evidence produced in favour of biopsy at this meeting was negative. Dr. Jobson Horne instanced (*Proceedings*, pp. 66, 67) four cases where the larynx was opened for a tuberculous lesion which had been thought to be cancer. Apparently these were gleaned from the history of laryngology over a period of 50 years.

Class B does not afford many opportunities for performing a biopsy and none from the cases that come within Class A (2). In cases coming under Class A (1) section of a gland may clinch the diagnosis as in the following patient. A man came up to the clinic with a cauliflower mass in the larynx which looked like a carcinoma. He had such dyspnœa that it was necessary to do a tracheotomy on the next day before the complete medical examination could be made. While doing this operation the cricothyroid gland was found to be enlarged; the section proved to be tuberculous. This was subsequently confirmed by examination of the lungs.

I am, Sir, yours faithfully,

Welbeck-street, W., Nov. 4th, 1929. T. B. LAYTON.

THE MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY, LIMITED.

To the Editor of THE LANCET.

SIR,—In reply to Mr. Bowdler Henry's attack on the board of this Society, I should like to say—

(1) that I was present at the general meeting and heard the discussion on Dr. Harvey Hilliard's resolutions and was perfectly satisfied with the board's treatment of them which was at once sympathetic and firm; and

(2) that as the unanimous recommendations of the directors, as set out in the annual report, were directly attacked it was only to be expected that the board would send out for proxies.

I am, Sir, yours faithfully,

Chelsea, S.W., Nov. 1st, 1929. E. F. THOMAS.

THE BROWN *v.* WHITE BREAD CONTROVERSY.

To the Editor of THE LANCET.

SIR,—The letter by Dr. S. H. Belfrage in THE LANCET of Nov. 2nd, asking those who hold opposing views to those of Prof. V. H. Mottram and Miss Gladys A. Hartwell to express their views on these experiments, induces us to make the following comment. Mottram and Hartwell have now definitely abandoned their former contention that white bread contains a considerable amount of vitamin B, and is not markedly inferior in that respect to wholemeal bread or germ bread. They now admit that the two last-named types of bread are richer in vitamin B, although they still conceal the fact that white bread is exceedingly poor in vitamin B. Incidentally they make an error in suggesting that the controversy has been complicated by the advent of germ breads. If they had consulted some such standard text-books on nutrition as Hutchison's "Food and Principles of Dietetics," they would have found that germ breads had been manufactured and consumed long before the vitamins were discovered. It is therefore now agreed that white bread is inferior to wholemeal bread and germ bread in so far as its vitamin-B content is concerned. Whether this is a matter of importance to the general public or not may be left to the judgment of your readers.

Mottram and Hartwell now shift the discussion to a new ground. They say that "an ordinary diet" contains so much vitamin B amongst other things that "the deficiencies of white bread" are amply compensated. In saying this they beg the whole question at issue. We may quote here the following sentences from our previous paper[1]:—

"On a varied diet which includes milk, butter, eggs, porridge, potatoes, and other vegetables, the absence of vitamin B from bread may not be a serious defect. But the people who can afford such a diet do not eat much bread anyhow. It is among the poorer classes, and especially the children of the poorer classes, where bread represents the bulk of the daily diet, and where butter is replaced by margarine, that the absence of vitamin B from white bread has to be considered as a serious dietetic defect. Reports of medical officers of health show that many of these children live on a diet composed of white bread, margarine, jam, and fish, with perhaps some potatoes. Such a diet is certainly deficient in both vitamin A and B, and could be made adequate as regards the latter vitamin by the consumption of bread rich in vitamin B."

It will be seen that there is here again agreement between our views and those of Mottram and Hartwell, but it will also be seen that these authors evade the issue that according to the reports of medical officers of health many children live on a diet composed chiefly of fish, potatoes, white bread, margarine, and jam. This is not "an ordinary mixed diet," and from what we know of the vitamin-B content of the articles of food composing this diet, it is poor in vitamin B_1. It would not require long and costly experiments to prove whether on such a diet the partial substitution of wholemeal bread or germ bread for white bread as suggested by us would or would not have a beneficial effect.

The diet chosen by Mottram and Hartwell in their experiments, and called the "diet of the Essex agricultural labourer," is a very different one. Their experiments, incomplete as they admittedly are, prove that the diet is defective, and since the defects are not remedied by the substitution of bread rich in vitamin B for bread poor in it, all that one can conclude is that the defects of this diet cannot be remedied by the addition of vitamin B_1 alone. But when in the last sentence of their paper the authors make the bold assumption of implying that the diet called "the diet of the Essex agricultural labourer" represents the diet of the working classes of this country we cannot agree with them. There is no justification for this assumption. Nobody can lay down a definite diet as representing that of the working or any other class. Diet varies from household to household. The letter from Sir Bruce Bruce-Porter and the experience of medical officers of health referred to in the quotation from our paper paint a very different picture from that given by Mottram and Hartwell.—We are, Sir, yours faithfully,

J. C. MOTTRAM.
W. CRAMER.

Radium Institute, Imperial Cancer Research Fund, Nov. 4th, 1929.

CURES AND PREVENTION.

To the Editor of THE LANCET.

SIR,—Dr. Ainley Walker makes a fine point. The fact cannot be denied that the injection of the antitoxin causes destruction of the diphtheria bacilli in the patient, whatever the exact method of that destruction is, and is therefore an intravital germicide. I will take him on the theoretical point he has made. Assuming, an assumption with which, perhaps, he will not agree, that the toxin is the ferment by which the microbe hydrolyses, therefore kills, the living tissues, in order to live, surely if the combining power of that ferment were neutralised, and the ferment therefore, not capable of bringing about the digestion of the material, the microbe must die of inanition the antitoxin can therefore quite properly be considered a germicide. If antiferments to X.Y.'s digestive ferments were injected into X.Y., causing his death by inanition, it would be a very efficient homicide.—I am, Sir, yours faithfully,

Harley-street, W., Nov. 1st, 1929. W. M. CROFTON.

[1] THE LANCET, 1927, ii., 1090.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

HIGHLANDS AND ISLANDS (MEDICAL SERVICE) FUND.

THE Scottish Office have issued the following explanatory memorandum in connexion with the legislation which the Government are introducing this session to authorise the removal of the existing limitation of the Government grant to the Highlands and Islands (Medical Service) Fund: "Subsection (1) of Section 1 of the Highlands and Islands (Medical Service) Grant Act, 1913, authorises the payment to the Highlands and Islands (Medical Service) Fund established under that Act of an annual grant of £42,000 out of moneys provided by Parliament to be applied for improving the medical service in the Highlands and Islands of Scotland. The Fund is administered by the Department of Health for Scotland in accordance with schemes made by the Department with the consent of the Treasury. Any unexpended balance of grant is not liable to surrender at the close of the financial year. Since 1920 the expenditure out of the Fund has been greater than the annual income, the excess having been met from unexpended balances of grant which accumulated during the war years, when it was impossible to give full effect to the approved schemes in the conditions then obtaining. These accumulated balances will be exhausted this year, and it is necessary to make further provision for financing the Fund. It is proposed to introduce legislation to remove the limitation of the grant to £42,000 by authorising such additional sum as may be annually voted by Parliament for the purpose. The additional sum proposed in any year will be included in the Estimates of the Department of Health for Scotland. It is estimated that the additional sum required to be so included will be £10,650 for the current financial year and from £20,000 to £30,000 in future years."

THE WIDOWS' PENSIONS BILL.

In the House of Commons on Wednesday, Oct. 30th, Mr. A. GREENWOOD, Minister of Health, moved the second reading of the Widows', Orphans' and Old Age Contributory Pensions Bill, and said that it was in accordance with their election pledges and the statement contained in the King's Speech that the Government had brought forward the Bill, and had undertaken a comprehensive inquiry into the complex system of social insurance that now existed. The Bill was a small instalment of a larger policy. The health insurance scheme, on the one hand, and contributory pensions on the other, were closely interlocked as regarded range of insurance and collection of insurance; but on the fundamental matters of finance and general organisation there were quite distinct principles at work. In consequence of the system having grown up piecemeal—and he was not complaining about that—different principles entered into the conception of services that were provided for closely related needs, and there had been distinct forms of administrative machinery set up for services which were broadly similar in purpose. Because of that, and the other problems which were now in the forefront of public opinion, it was the view of the Government that the time had arrived when they should take stock of the existing system of social insurance, and a Committee of the Cabinet was engaged on a survey of the various schemes, an analysis of the various and complex problems which schemes developed on independent lines inevitably brought into existence, and consideration of the very large and important questions of the relations between insurance, on the one hand, and the various forms of social problems which were met outside of insurance on the other. The Bill before the House only professed to deal with the more important problems affecting the insured people arising out of the Act of 1925; the other and larger issues were precisely those questions which were now being examined by the Cabinet. It was the desire of the Government to build up by stages towards a comprehensive, adequate, harmonious system of social insurance which would enable all citizens effectively to meet the misfortunes and risks of life. To that task they had laid their hands; they would not consider that they had completed it until they had fulfilled their obligations. But there were certain amendments of the Contributory Pensions Act that could and should be made at once. The object of this Bill was to make those amendments. The main principle of the measure was to bring within the scope of the pensions scheme persons of the same class as those for whom the original Act was intended, and who by pure accident were at present excluded from its provisions. Under this proposal would be brought within the scheme as a whole all those women whose husbands could not participate because they were over 70 when the Act came into operation, or because they died before the appointed date of the Act of 1925. At the same time opportunity had been taken to relax certain restrictions which experience of the working of the Act had shown to be necessary, and to enlarge some of the provisions which experience had shown to be desirable. By July 1st, 1930, something like 210,000 pre-Act widows would be brought within the scope of the Bill for pensions. These would be the elderly widows who were over 60. On Jan. 1st, 1931, there would be brought within the scope of the Bill the class of widows between 55 and 60 amounting to 85,000. That meant that about 200,000 widows would begin to benefit as soon as they reached the age of 55. Provision was being made for round about 500,000 pre-Act widows in the present Bill. He emphasised that number, because to-day there were about 200,000 post-Act widows receiving pensions. The Bill also proposed to do something for the pre-Act widows with dependent children. By prolonging the right to pension until the youngest child reached the age of 16, about 18,000 widows would receive this benefit. Finally, old age pensions would be given at 65 to 24,000 wives of men who happened to be over 70 before pensions began to be paid.

For the period up to 1936 the additional expenditure would cost on an average about £8,000,000 a year. The Chancellor of the Exchequer proposed to increase the Treasury contribution from £4,000,000 to £9,000,000 a year; but in 1936—with the flat £4,000,000 contribution—a very substantial increase in the State contribution would be required. In order to reach the day of larger contributions by easy stages the Chancellor of the Exchequer proposed each year to increase the State contribution by £1,000,000 until it reached, under the proposals before the House and the present Act, a maximum of £21,000,000 a year.

The Bill was read a second time.

NEW BILLS INTRODUCED.

On Friday, Nov. 1st, Mr. G. HIRST presented a Bill to amend Subsection (4) of Section 9 of the Workmen's Compensation Act, 1925.—Mr. ALPASS presented a Bill to consolidate and amend enactments relating to midwifery, &c. Both Bills were read a first time.

UNEMPLOYMENT SCHEMES AND PUBLIC HEALTH.

On Monday, Nov. 4th, Mr. J. H. THOMAS, Lord Privy Seal, made a statement in which he described the progress of his plans for dealing with unemployment. Referring to the severe drought experienced during the past summer, the right hon. gentleman said that every water authority in the country ought to be alive to the dangers of such a situation, and there would be no excuse if there was a repetition next year of the dangers and hardships which the nation had passed through. He had circularised all the authorities and those responsible for water supplies, both large and small, and he was able to announce that included in the £11,000,000 which was to be spent on schemes already approved was a considerable number of large water schemes. No water authority would be held blameless next year if they had failed to take advantage of the opportunities now afforded to them.

During the debate which followed Mr. Thomas's statement—

Sir R. ASKE suggested that something might be done to deal with the unemployment in the building and allied trades, which represented 12 per cent. of the whole problem. There was a large amount of frightful overcrowding in all the great industrial centres. This had a very bad effect on the health of the people. The Government should take their courage in both hands and deal with this overcrowding.

Mr. THOMAS said that one of the first measures of the Government this session would be a Slum Clearance Bill to deal with one side of the housing problem. He had urged the municipalities to take advantage of the Government's facilities to help them to undertake work which ought to have been done long ago. That offer was still open.

Sir R. ASKE, while expressing satisfaction at Mr. Thomas's statement, said that slum clearance would not meet the difficulty. There was an actual shortage of houses, and they must build more houses before they destroyed the slums. The health of the people was suffering, and if the Government did not build the houses now they would have to build hospitals in future. The Government should find out how many houses were necessary, and provide one house for one family, if possible. If they did that, they would greatly benefit public health and would save a vast sum which otherwise would have to be spent in future on public health services.

PROTECTION OF DOGS BILL.

On Nov. 4th Sir R. GOWER presented a Bill to prohibit the vivisection of dogs. The Bill was read a first time.

HOUSE OF COMMONS.

THURSDAY, OCT. 31ST.

Washington Eight Hours Convention.

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of Labour when it was proposed to introduce the measure to give effect to the Washington Hours Convention.—Miss BONDFIELD replied: I hope to introduce the Bill at an early date.

Various Industries (Silicosis) Order.

Mr. HOLLINS asked the Home Secretary when he proposed to make an order to extend the present Various Industries (Silicosis) Order, so as to make provision for the payment of compensation in the case of partial incapacity due to silicosis.—Mr. CLYNES replied: I am anxious to provide for the partial disablement cases as soon as practicable, but adequate medical arrangements must first be made. As my hon. friend is aware, this difficult question has been under investigation by a Departmental Committee. The Committee has now reported, and a copy of the Report has been laid before Parliament. I concur generally in the arrangements recommended, but I am advised that they cannot be given effect to without further legislation. I am accordingly considering an amending Bill, which I hope may be introduced and passed into law during the present session.

Mr. HOLLINS asked the Home Secretary if he was aware of the abnormal number of cases of silicosis in the pottery industry for which compensation had been paid since Feb. 1st last, when the Various Industries (Silicosis) Order came into operation; and whether, in view of the serious nature of the incidence of silicosis amongst pottery workers, he would appoint a committee of inquiry to consider and report as to amendments to the present lead and dust regulations required to give adequate protection to the health of the workers engaged in the pottery industry.—Mr. CLYNES replied: A certain number of cases have come to the notice of the Department but I have no complete figures. As my hon. friend knows, the question of further preventive measures was very carefully investigated in 1927 to 1928 by a Departmental Committee (of which he was a member), which recommended various additional precautions, including periodic medical examinations in some of the most dangerous processes. It is intended to give effect generally to the proposals of the Committee, but I am not sure how far it may be practicable or desirable to attempt to deal with the subject pending the establishment of the new medical arrangements to which I referred in my reply to the last question. So far as I am aware, there is no need for the appointment of any further Committee.

Tannic Acid Treatment for Burns.

Dr. VERNON DAVIES asked the Home Secretary if he proposed to issue any instructions to factories and workshops in reference to the tannic acid treatment for burns.—Mr. CLYNES replied: The value of this method in the treatment of cases in hospital is demonstrated by the recent Report of the Medical Research Council, but its application to the first-aid treatment of minor cases of burns, which form a great majority of the cases at factories and workshops, would not appear to have been explored. The Senior Medical Inspector of Factories has been asked to go into this, and the matter will be further considered on his report. Meanwhile I am hardly in a position to issue any instructions.

Experiments on Living Animals.

Mr. FREEMAN asked the Home Secretary whether his attention had been called to the further increase in the number of experiments on living animals, especially without anæsthetics, being 300,915 during 1928 and 44,073 more than in 1927; and whether he would consider the desirability of setting up a full inquiry into the matter with a view to preventing this practice, paid for in many cases by public funds.—Mr. CLYNES replied: The answer to the first part of the question is in the affirmative. The increase of experiments under Certificate A (i.e., without anæsthetics) is largely, if not entirely, due to an increased use of animals for the purposes of standardising drugs for use in medical practice, of diagnosing the diseases of patients under treatment, and of testing the purity of milk and other foods in the interests of public health. The whole question of experiments on animals was very carefully and thoroughly investigated by the Royal Commission on Vivisection which reported in 1912; and I do not consider that a further inquiry is called for.

Nursery Schools.

Mr. KELLY asked the President of the Board of Education the number of nursery schools in operation; and whether proposals were made for the opening of nursery schools in other areas.—Sir CHARLES TREVELYAN replied: The number of nursery schools in operation under the Board's regulations in England and Wales is at present 29. There are, in addition, 15 proposals before the Board for the establishment of nursery schools, and the provision of such schools is under consideration in a number of other areas.

Pollution of the River Lee.

Captain AUSTIN HUDSON asked the Minister of Health whether he had yet concluded his inquiries into the pollution of the River Lee; and, if so, what action he proposed to take.—Mr. GREENWOOD replied: I have had an investigation made. The nature of the stream makes the pollution problem difficult in this case. There has been an improvement, but the conditions are still not satisfactory. I propose to confer with the authorities concerned.

Birth Control Information.

Mr. THURTLE asked the Minister of Health is he had received a resolution passed by a recent conference of the National Council of Women's Societies, asking that local authorities should be permitted to give information on birth control to married women who desire it; if he was aware that this resolution was passed by a large majority; and if he was proposing to take any action to carry out the wishes of this representative body of organised women.—Mr. A. GREENWOOD replied: I have received this resolution, though I have not been informed by what majority it was passed. The question has been considered by the Government, and they do not propose to depart from the policy hitherto followed in this matter.

Ministry of Health Staff.

Brigadier-General CLIFTON BROWN asked the Minister of Health what was the number of the personnel employed by the Ministry of Health on June 1st, 1929; what are the numbers at present employed; and what was the increase or decrease in the cost.—Mr. GREENWOOD replied: The number of personnel employed by my Department on June 1st was 5883; the present number employed is 6006. The approximate annual increase in cost is £35,500.

Medical Officers on Local Authorities.

Dr. VERNON DAVIES asked the Minister of Health if his attention had been drawn to the fact that under the Local Government Act, 1929, many district medical officers and public vaccinators who had been members of county councils and county borough councils were ineligible for future membership unless they forfeited their appointments; and, as the experience of such members in health matters was of much value, would he consider some means by which the services of these practitioners could, when desired, be utilised on such county and county borough councils.—Mr. GREENWOOD replied: This matter has been before the Royal Commission on Local Government. Their report will be issued shortly, and any recommendation made will be duly considered.

Medical Research in India.

Major GRAHAM POLE asked the Secretary of State for India whether any steps had been taken in regard to the scheme, sanctioned by the finance committee of the legislative assembly in January, to remove the central medical research institute to Dehra Dun; and whether, especially in view of the objection raised by the All-India Medical Association to the removal of the institute to Dehra Dun, where there would be an absence of clinical facilities and of the scientific coöperation available in larger urban centres, the Government will examine the possibility of reconsidering the scheme.—Mr. WEDGWOOD BENN replied: The latest information I have is that work had not been started at Dehra Dun on Sept. 2nd. I will bring my hon. friend's suggestion to the notice of the Government of India, but I understand that they have already received representations on the same lines from one or more medical associations in India.

Manufacture of Dangerous Drugs.

Mr. MANDER asked the Home Secretary what was the number of factories in this country engaged in the manufacture of opium, heroin, cocaine, and other noxious drugs; the amount of capital involved; and the number of employees.—Mr. CLYNES replied: Eight firms are at present licensed to manufacture medicinal opium, heroin, cocaine or morphine (i.e., pure drugs under the Acts): five to manufacture medicinal opium; one to manufacture medicinal opium, morphine, and heroin: one to manufacture morphine, heroin, and cocaine; one to manufacture cocaine. I have no information as to the amount of capital involved or the number of persons employed, but the number is certainly under 50. I am sending the hon. Member a copy of the Annual Report of the British Government to the League of Nations.

Hospital Treatment for Orthopædic Patients.

Brigadier-General WRIGHT asked the Minister of Health whether representations had been made by county councils to have the legal right, which they did not now possess, to assist all needy orthopædic patients without regard to technical group distinctions; and, if so, whether he was prepared to introduce legislation to confer this right on them.—Mr. GREENFIELD replied: Representations on this subject have been received from one county council. I am advised that under Section 14 of the Local Government Act, 1929, county councils will, as from April 1st next, be empowered to provide all necessary hospital treatment for orthopædic patients.

Typhoid in London Area.

Mr. DAY asked the Minister of Health the number of cases reported of typhoid, and the number of deaths that had occurred in the London area for the three months ended to the last convenient date; and whether his officers had been able to trace the origin of these outbreaks.—Mr GREENWOOD replied: As regards the first part of the question the particulars required are as follows:—

Enteric Fever (Typhoid and Paratyphoid).—Deaths of London residents occurring in London or in metropolitan institutions.

Week ending	Notifications.	Outside London.	Week ending	Notifications.	Outside London.
July 6	2	1	Sept. 7	9	2
„ 13	5	—	„ 14	17	3
„ 20	7	1	„ 21	6	1
„ 27	4	—	„ 28	6	—
Aug. 3	6	2	Oct. 5	5	—
„ 10	5	1	„ 12	23	1
„ 17	6	—	„ 19	30	3
„ 24	11	—	„ 26	41	3
„ 31	4	—			
	Total			187	18

(In addition there were two deaths occurring in London of non-residents of the County of London. The notifications in these cases are not included above.)

As regards the recent outbreak in South-East London, which is responsible for the large increase in notifications this month, my officers have coöperated with the medical officers of health of the districts affected. I understand that the source of this outbreak has not yet been definitely traced, but there is reason to believe that the infection is no longer operative.

FRIDAY, NOV. 1ST.

Medical Examinations of Pensioners.

Mr. RAMSBOTHAM asked the Minister of Pensions (1) the frequency with which ex-Service pensioners had to be re-examined before medical boards; and whether, to avoid the constant anxiety to the men and the cost of the inspection, he could accelerate the rate at which pensions were being stabilised; and (2) what classes of great war pensioners had their pensions stabilised and which had not; and to which class belonged the men suffering with eye trouble.—Mr. F. O. ROBERTS replied: Pensioners are medically examined at such intervals only as is essential to determine the rate of compensation due to them. I have full sympathy with the hon. Member's desire that final awards should be made as soon as possible in all suitable cases. This is, in fact, the practice of the Department, and already more than four-fifths of the men on the pension list, suffering from disabilities of all kinds, are in receipt of final awards. This proportion applies also to cases of affections of the eye.

MONDAY, NOV. 4TH.

Opium Consumption in India.

Major GRAHAM POLE asked the Secretary of State for India whether the six inquiries instituted by the local governments concerned to inquire into the high consumption of opium in certain areas had been completed.—Mr. WEDGWOOD BENN replied: All but one of the inquiries have been completed.

Artificial Limb Fitting Centre.

Viscount ELMLEY asked the Minister of Pensions whether the artificial limb fitting centre now situated at Norwich would be transferred to Cambridge.—Mr. F. O. ROBERTS replied: Transfer of the centre referred to in due course is contemplated; Cambridge being the most central and convenient point in the area supplied by this centre.

Final Pension Awards.

Sir GEORGE BOWYER asked the Minister of Pensions in how many cases during the last five months pensions had been re-awarded on the ground that final awards should never have been made.—Mr. F. O. ROBERTS replied: Precise statistics are not available for broken periods, but I understand that the number of cases in which further awards have been made during the five months referred to is about 500.

River Pollution.

Rear-Admiral BEAMISH asked the Minister of Agriculture if the draft Report on river pollution had now been considered by the Standing Committee; and when the issue of the Report might be expected.—Mr. BUXTON replied: A draft report will be circulated this week to the members of the committee for their consideration. The Report will be published as soon as possible after it has been approved by the committee.

National Radium Trust.

Sir KINGSLEY WOOD asked the Minister of Health the amount of money expended to date by the National Radium Trust for augmenting the supply of radium for use in the treatment of the sick.—Miss LAWRENCE, Parliamentary Secretary to the Ministry of Health, replied: No disbursements have yet been made, but arrangements are being completed which will result in a considerable augmentation of the supply of radium during the present month.

Artificial Silk Manufacture and Public Health.

Mr. KELLY asked the Minister of Health whether reports had been received from areas in the neighbourhood of artificial silk factories as to the effect on health of the manufacture.—Miss LAWRENCE replied: Reports have been received from districts in which there are artificial silk works. These are substantially in accord with the views expressed in the Report of the Chief Alkali Inspector, to which reference is made in my reply of July 25th last to a question.

TUESDAY, NOV. 5TH.

Care of Mental Defectives in Kent.

Mr. ALBERY asked the Minister of Health what accommodation existed in Kent for the care of mental defectives and the number in such institutions on the last available date.—Mr. GREENWOOD replied: The following accommodation in the County of Kent, excluding the County Borough of Canterbury, is certified or approved for the reception of mental defectives at the instance of the Kent County Council:—

—	Defectives over age 16.	
	Male.	Female.
Cranbrook P.L.I. ..	10	20
Dover P.L.I.	—	6
Eastry P.L.I.	20	24
Malling P.L.I.	—	14
Sevenoaks P.L.I. ..	10	20
Tenterden P.L.I.	—	118*
Tonbridge P.L.I.	40 males under 16.	
Totals..	Over 16: 40 males, 136 females. Under 16: 40 males, 66 females.	

* 66 under and 52 over age 16.

There are two further institutions for defectives within the county: (1) Princess Christian's Farm Colony at Hildenborough, Kent, for 71 male and 68 female defectives; but it is conducted by a voluntary body, and the Kent County Council receives no preference in the allocation of vacancies. (2) Darenth Training Colony, Dartford, an institution of the Metropolitan Asylums Board, but all future vacancies will be filled by cases arising in the London County Council area. The Kent County Council have purchased an estate known as Leybourne Grange, on which they propose to develop a colony for mental defectives. At present the mansion is being adapted for the accommodation of about 90 female patients. On Jan. 1st last the Kent County Council was responsible for 589 mental defectives in institutions or on licence therefrom. The return then furnished did not differentiate between cases detained in institutions in Kent and elsewhere, but I am informed that many Kent cases are sent on contract to voluntary institutions outside the county, and that 264 of the 589 patients were detained in institutions of the Metropolitan Asylums Board.

Shipbreaking Workers and Lead Poisoning.

Mr. WATSON asked the Home Secretary what precautions, if any, were taken by the Alloa Shipbreaking Company at Rosyth to safeguard the health of the workers engaged on burning against the dangers of lead poisoning.—Mr. CLYNES replied: It appears from a report by one of the medical

inspectors of factories who recently visited these works that this company devote great care to the prevention of lead poisoning. A doctor has been appointed to give medical supervision, and arrangements are made to transfer to other work burners who show signs of contracting, or being specially liable to, the disease. Steps are also taken to see that so far as possible men do not work in such a position as to be exposed to fumes from another burner. I am advised that there must necessarily be some risk of lead poisoning in this process, but the firm appear to be doing their best to reduce it to a minimum, and I am glad to say that the incidence of lead poisoning at the works has considerably decreased.

The Government and High Milk Prices.

Mr. WISE asked the President of the Board of Trade what action he proposed to take in view of the high cost of distribution of milk and of the disregard shown by the traders of the views expressed by himself and by the Food Council.—Mr. W. GRAHAM replied: The Government have considered the position of the Food Council with particular reference to the recent refusal of London milk distributors to conform to the Council's recommendations as to the retail price of milk in August last. I should like at the outset to state that the Government fully recognise the value of the work done by the Food Council, notwithstanding that since its inception in 1925 it has had no statutory basis and has been without power to require the production of information when it was not forthcoming voluntarily. I may add that neither the Food Council nor any other body has power to compel the observance of the Food Council's recommendations. In the opinion of the Government this position is highly unsatisfactory, and we intend to submit proposals to alter it early next year. The Government are of opinion that the interests of the consumer demand that investigation should take place not only in regard to foodstuffs, but also in regard to other necessaries of life. With this object in view, we propose to ask Parliament to set up a Consumers' Council which shall have power to obtain compulsorily any information that it may require for the purposes of its inquiries. The Government intend also to submit proposals enabling them to deal with trading interests which refuse to accept the views which the Government may reach after considering the recommendations of the Consumers' Council. As I have already indicated, it must be some months before the Consumers' Council can be set up. I am therefore asking the Food Council to remain in being for the purpose of carrying out investigations into such food questions as may arise meantime.

Obituary.

NINIAN McINTYRE FALKINER, M.D. DUB., F.R.C.P. IREL.

THE death of Dr. Ninian Falkiner occurred, after a short illness, on Oct. 30th, at the age of 74. Though his health had been unsatisfactory for some months past he was going about until ten days before his death.

Ninian Falkiner was educated at Trinity College, Dublin, and the Carmichael School of Medicine, and graduated as M.B. in 1884. He became a Fellow of the Royal College of Physicians of Ireland in 1891, and took his M.D. degree in 1900. He spent several years as a poor-law medical officer in the city of Dublin, until in 1900 he was appointed as medical superintendent of statistics in the General Register Office. He held this post for some 20 years, until he was retired on reaching the age-limit. He was for a term Vice-President of the Royal College of Physicians of Ireland, and served as examiner both in that College and in Trinity College. He was also lecturer in Vital Statistics in Trinity College.

A colleague writes of him that he was one of the most modest and self-effacing of men. "He never sought prominence, but he carried out any duties confided to him with a punctilious care. Seeking nothing for himself he was unwearied in finding opportunities for kindness to others. He never was known to utter an unkind word of others, and one cannot believe that he ever conceived an unkind thought. His memory will long be pleasant to all who knew him."

ANTONIUS JOSEPH MANASSEH, B.Sc. LEEDS, M.R.C.S. ENG.

Dr. A. J. Manasseh, who died on Oct. 31st, had been superintendent since 1898 of the Friends' Missionary Hospital at Brummana, on the slopes of Mount Lebanon. Born at Beirut in 1866, he was of Syrian parentage, and was brought up in the Orthodox Greek Church. He was educated at the High School of the Society of Friends at Brummana, under Theophilus Waldmeier, founder of the Lebanon Hospital for the Insane. He studied at the Syrian Protestant College, Beirut (now known as the American University), and later came to England for his medical training. He took the degree of B.Sc. at the University of Leeds, and after studying at the London Hospital qualified in 1897, later proceeding to the M.D. degree of Constantinople. He was accepted as a missionary of the Friends' Foreign Mission Association in 1897, and after a year's work in Syrian villages he became superintendent of the Quaker medical work at Brummana. In Syria he built up a wide reputation as physician and surgeon, and patients came to him from all over the country. In 1915 he was taken into the Turkish Army as a medical officer, and after being stationed at Damascus, in charge of the typhus hospital there, he was moved to the military hospital at Baalbek, and then advanced to a field hospital at Toul Kerum. There he was taken prisoner by Allenby's army, in September, 1918. He was given medical work in charge of a prison hospital by the British, but was soon released and joined the relief unit of the Syria and Palestine Relief Fund. Although suffering bad health from his experiences, he refused to take any furlough until he had been able to meet the heaviest demands of the relief work. He has since worked at Brummana, where, at the time of his death, he was superintending the building of a new hospital.

"Last spring," writes Dr. Fortescue Fox, "I had the privilege of spending some hours with Dr. Manasseh at Brummana where he had so long been the leading spirit. We discussed the site on the plan of the new hospital by which he hoped to extend the influence of this medical and educational post in the Lebanon. We went together afterwards to Beirut, and everywhere he was welcomed as much for his presence as his advice. He was a fine example of his countrymen at their best."

In 1899 Dr. Manasseh married Henrietta, daughter of George Benington of Enfield. His widow is left with a son and a daughter.

DONATIONS AND BEQUESTS.—Mr. James Fleming Fyfe Jamieson, of Ruthven, Meigle, Forfar, left £1500 for the endowment of a bed in the View Park Nursing Home, and £5000 for various charitable pruposes.—Mr. William Gilman, of Hazelcroft, Alderley Edge, Cheshire, who left over £141,000, besides personal bequests, directed that failing certain trusts, the residue of the property to be divided as to one-half equally between the Royal Infirmary, Manchester, and the Ancoats Hospital, Manchester, and one-half for such other Manchester charities, hospitals, and institutions, and in such proportions and in such manner as his trustees may think fit.—Mr. Peter Bond Burgoyne, of Broadlands, Ascot, left £1000 to the National Hospital for Consumption, Ventnor.—Mr. Thomas Albert Turner, of Lynwood, Newtown, Montgomery, left £1000 to Montgomery County Infirmary, Newtown, for the endowment fund.—Mrs. Eliza Macloghlin, Wigan, bequeathed a legacy of £10,000 to the Royal College of Surgeons for scholarships to be founded in memory of her husband, the late Dr. E. P. P. Macloghlin, of Wigan.—Mr. James Tivendale Spence, of Halbeath, near Dunfermline, left £1000 to the Royal Infirmary, Edinburgh, and the residue of his trust estate to the Dunfermline and West Fife Hospital.—Mr. Robert Benjamin Field Thornton, of Headfield-road, Savile Town, Dewsbury, left £1000 to the Dewsbury and District General Infirmary to endow a Robert Benjamin Field Thornton bed.—Mrs. Martha Roberta Meharry, of Linden Mansions, Hornsey-lane, London, N., besides other bequests, left £1000 to the Royal Victoria Infirmary, Newcastle-on-Tyne, to endow a bed in King Edward's Ward to be named after her late brother, Dr. W. J. Davison.

Medical News.

UNIVERSITY OF OXFORD.—The following awards have been announced:—Welsh Prize: A. P. Meiklejohn. Theodore Williams Scholarships: A. H. Hunt (Human Anatomy), J. W. Litchfield (Physiology), and J. R. Braybrooks (Pathology). Radcliffe Scholarship in Pharmacology: J. R. Braybrooks and G. S. Grist (equal).

UNIVERSITY OF CAMBRIDGE.—At a congregation on Nov. 2nd the following degrees were conferred:—

M.D.—T. A. Butcher.
M.Chir.—John Gray.
M.B. and B.Chir.—J. St C. Elkington, R. A. P. Gray, Alan Maberly, S. S. Chesser, and J. F. Stent.
M.B.—S. D. Isaacs.
B.Chir.—A. T. Howell and C. E. Donaldson.

UNIVERSITY OF LONDON.—Mr. Edwin Deller, LL.D., previously Academic Registrar, has been appointed to the post of Principal of the University as from Oct. 1st, in succession to Mr. T. Franklin Sibly, D.Sc., now Vice-Chancellor of the University of Reading. In 1920, Dr. Deller was appointed assistant secretary to the Royal Society, but returned to the University in 1921 to take up the post of Academic Registrar. From June, 1928, to February, 1929, he was acting Principal Officer.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—A quarterly Comitia of the College was held on Oct. 31st, with Sir John Rose Bradford, the President, in the chair. The following were admitted Members of the College:—

Ilahi Bakhsh, Thomas Henry Booth Bedford, Heward Bell, Denis Hubert Brinton, Philip Ellman, Ishak Kirolos Gayid, Leslie Wakefield Hale, Isidore Liknaitzky, Michael Malk, Arnold Ashley Miles, Sinclair Miller, Minocher Bamanji Mody, Ganpat Bapuji Mohile, John Barrie Murray, John Henry Noble, Henry Edward Nourse, William Frederick Howson Ray, Cuthbert Lawson Stote, Bertrand Edward Tompson, Thomas à Beckett Travers.

Licences to practise were conferred upon 126 candidates (117 men and 9 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the by-laws of the College. The following are the names and medical schools of the successful candidates:—

H. S. Atkinson, Oxford and London; G. O. Barber, Cambridge and St. Mary's; E. E. Barnett, London; G. H. Bateman, Oxford and King's Coll.; T. S. Belcher, London; F. Bell, Oxford and St. Thomas's; E. Bellamy, Guy's; J. H. Bentley, Cambridge and Univ. Coll.; J. A. K. Brown, Manchester; W. D. Brown, Cambridge and London; D. R. Buchan, Birmingham; P. C. Chakravorty, Calcutta and Middlesex; G. Clarke, Guy's; J. P. Collinson, Sheffield; S. C. S. Cooke, Middlesex; W. H. C. Croft, Birmingham; J. H. Cyriax, Cambridge and St. Thomas's; H. W. Davies, Oxford and King's Coll.; T. Davies, Cardiff and St. Bart.'s; C. D. D. de Labilliere, St. Bart.'s; H. B. A. R. Densham, Guy's; A. Eckford, Cambridge and Guy's; J. A. Edward, Manchester and St. Bart.'s; H. G. Edwards, Cardiff and St. Bart.'s; Lilian P. Edwards, Royal Free; M. P. Ellis, Univ. Coll.; J. F. Fisher, St. Bart.'s; B. M. Fonseka, Middlesex; A. M. Fratel, Bombay and Durham; L. Gabbe, Cape and Guy's; D. K. Gaitskell, Guy's; H. S. H. Gilmer, Cambridge and St. George's; R. McN. Glover, Cambridge and Westminster; P. E. Glynn, Leeds; C. G. Gordon-Wilson, London; G. H. A. Graetz, Cambridge and St. Bart.'s M. B. W. Gray, London; Bryneilen Griffiths, Cardiff and Charing Cross; E. Gwynne-Evans, Univ. Coll.; Verna Hackett, Adelaide and Westminster; R. H. Hadley, Melbourne, Y. A. A. Hammouda, Cairo and St. George's; Flora Hargreaves, Univ. Coll.; C. C. Harvey, Cardiff and Univ. Coll.; E. Harvey, Oxford and Middlesex; C. F. Hecker, Adelaide and London; Violet L. de A. Hickson, Westminster; F. K. S. Hirschfeld, Melbourne and London; H. B. Hodson, St. Thomas's; J. Hopton, St. Bart.'s; R. H. Hucknall, Birmingham; Mary A. Hughes, Cardiff and Charing Cross; E. F. Hunt, St. George's; C. S. Kah, Cambridge and St. Thomas's; K. S. Keele, Guy's; E. J. Kerr, Birmingham; H. Y. Khwaja, Bombay and London; N. Kramer, St. Bart.'s; M. Lee, Durham and Middlesex; E. E. Lewis, St. Mary's; W. D. Lovelock-Jones, Cardiff and Univ. Coll.; F. T. F. Lutter, Cambridge and St. George's; R. W. McConnel, Cambridge and King's Coll.; E. M. MacLachlan, Guy's; F. N. Marshall, Manchester; Eileen M. Massey, King's Coll.; N. D. Matson, Otago and Charing Cross; E. C. W. Maxwell, Cambridge and St. Thomas's; P. H. Merlin, Birmingham; T. J. Millin, Dublin; C. W. Morley, Cambridge and St. Mary's; I. B. Morris, Cambridge and Guy's; D. P. F. Mulvany, Charing Cross; W. D. Neill, London; J. N. O'Reilly, Oxford and Middlesex; B. W. Paine, Univ. Coll.; E. H. Parkinson, Birmingham; L. H. Peiris, Ceylon and King's Coll.; J. Petro, Cambridge and St. George's; I. E. Phelps, St. Bart.'s; R. F. A. Philpott, Oxford and St. Thomas's; T. B. Pitts, Guy's; F. Pomarantz and E. S. Pope, St. Bart.'s; A. C. Price and N. L. Price, Bristol; S. R. C. Price, King's Coll.; F. S. C. Pritchard, Guy's; C. F. H. Quick, Calcutta and St. Mary's; J. P. Raban, Middlesex; B. Ram, St. Thomas's; J. Richardson, Cambridge and Middlesex; Marjorie E. Roberts, Royal Free; J. A. Rogers, Calcutta and King's Coll.; T. N. Rudd, London; C. R. Salkeld, Oxford and St. Thomas's; L. Savronsky, London; J. G. Scadding, Middlesex; D. Sheehan, Manchester; B. C. Singh, Calcutta and Univ. Coll.; E. Sladen, Middlesex; F. J. G. Slater, Cambridge and Durham; J. H. Smith, Cambridge and St. Thomas's; J. O. Smith, Melbourne and St. Bart.'s; A. Somerville, Sheffield; P. D. B. Spence, Edinburgh and Guy's; F. R. Stansfield, Leeds; J. E. S. Stephens, Cambridge and St. Bart.'s; T. Stephens, Cardiff and London; M. Sternfeld, Freiburg and London; Muriel H. Steven, King's Coll.; G. D. Stilwell, St. Thomas's; H. J. Stracey, Madras and St. Thomas's; B. L. Taneja, Punjab and Guy's; J. M. Taylor, St. Bart.'s; T. H. E. Taylor-Jones, King's Coll.; E. G. Thomas, Cardiff and Univ. Coll.; J. C. T. Tregarthen, Guy's; C. E. H. Turner, London; G. S. Walker, Oxford and Univ. Coll.; C. J. Waring, London; J. H. Watkin, St. Bart.'s; K. Watman, Middlesex; V. W. L. Wells, Guy's; T. H. N. Whitehurst, St. Bart.'s; and T. H. Wilson, St. Thomas's.

Dr. John Hay, Dr. F. E. Fremantle, M.P., and Dr. J. B. Leathes were elected to the Council of the College, and Dr. E. P. Poulton gave faith as an examiner in medicine. Sir Francis Champneys was re-elected a representative of the College on the Central Midwives Board, and Dr. H. Letheby Tidy was elected a member of the committee of management. Dr. Robert Hutchison and Dr. James Collier were elected members of the Mackenzie Mackinnon Research Fund Committee. Dr. J. H. Abram and Dr. A. S. Barnes were re-elected to represent the College on the Court of Governors of the University of Liverpool and the University of Birmingham respectively, while Dr. A. S. Woodwark was re-elected as representative on the Central Council for District Nursing. The President announced that Surgeon-Commander Sheldon Francis Dudley had been appointed Milroy Lecturer for 1931, and that the Jenks Memorial Scholarship had been awarded to Francis Sansome Mitchell Heggs. He also announced that permission had been granted to the Ophthalmological Society to hold a reception at the College on April 3rd next on the occasion of its jubilee, and permission was granted to a request that the Savill Memorial Oration might be delivered at the College. The Registrar announced that Dr. J. W. Springthorpe, of Melbourne, had applied for the restoration of the diploma of Member which he had resigned in 1919.

A communication was received from the Home Office that by an Order of Council made on August 15th, 1929, Part III. of the Dangerous Drugs Act, 1920, has been applied to the esters of morphine and their respective salts, and to any preparation, admixture, and extract containing them.—A communication was also received from the University of Wales announcing that the Advisory Board of Medicine had been recently dissolved.—A report was received from Dr. Fremantle, who had represented the College at the Imperial Social Hygiene Congress held in London in July last, in which he commented upon the increased interest taken by the public in the subjects before the Congress.

Dr. R. A. Young presented reports from the Committee of Management concerning alterations in connexion with the regulations for the First and Final Examinations for the L.R.C.P., M.R.C.S.—Dr. Sidney Phillips presented the treasurer's annual statement of receipts and expenditure, and auditors were re-elected. Dr. Arnold Chaplin stated that among donations to the library during the last quarter was an account of the last illness of the Earl of Beaconsfield in the words of the late Dr. Mitchell Bruce.

After receiving the quarterly report of the examiners for the licence on the examination held in July last, the President dissolved the Comitia.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—Out of 15 candidates entered, the following 8 have passed the final professional examination and have been granted the diploma of L.D.S.:—

George Morton Smith McGibbon, Sugra Mohammed Ali, William Ainslie Elder Duncan, Walter Pearson Neilson, Robert Hugh Dewar, John Ellis Sprunt, Thomson Alexander Ferguson, and Donald Forbes Johnstone.

The following passed in the subject of pathology:—

Robert Kirkwood Nicol Clarkson and Robert Pearson Neilson.

UNIVERSITY OF DUBLIN.—On Saturday last Mr. William Pearson, surgeon to the Adelaide Hospital, Dublin, was elected Professor of Surgery in the University in succession to the late Mr. T. E. Gordon.

Mr. Pearson, who is a son of Mr. C. Y. Pearson, for many years Professor of Surgery at University College, Cork, was educated at Trinity College, Dublin, where among other achievements he won the Travelling Prize in Surgery. In 1910 he became a Fellow of the Royal College of Surgeons in Ireland, and in the same year was appointed assistant to the Professor of Surgery in Dublin University. During the war he was for some time engaged in work for the British Red Cross Society in France, and later as consulting surgeon in Sussex. He was twice mentioned in dispatches, and retired with the rank of lieutenant-colonel. Since then he has been surgeon to the Adelaide Hospital, Dublin, and to the University of Pensions Surgical Hospital at Blackrock.

WELLCOME HISTORICAL MEDICAL MUSEUM.—On Monday, Nov. 11th, at a reception to the Egypt Exploration Society, Mr. Warren Dawson will give an address on Egyptian Magic and Medicine. The reception will be at the Museum at 8.30 P.M.

HUNTERIAN SOCIETY.—A meeting of this Society will be held at The Cutlers' Hall, Warwick-lane, London, E.C., at 9 P.M., on Monday, Nov. 18th, when Earl Howe, Mr. E. B. Turner, and Dr. P. B. Spurgin will take part in a discussion on The Doctor and the Motorist.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual dinner of this society will be held at the Piccadilly Hotel, London, W., on Thursday, Nov. 14th, at 7.30 P.M. (Reception at 7.10.) Tickets are obtainable from the Executive Secretary at 1, Upper Montague-street, Russell-square, W.C. 1.

BRITISH SCIENCE GUILD.—At 4.30 P.M. on Tuesday, Nov. 19th, at the Goldsmiths' Hall, Foster-lane, London, E.C., Sir Walter Fletcher, F.R.S., secretary of the Medical Research Council, will deliver the Norman Lockyer Lecture. His subject will be Medical Research: the Tree and the Fruit, and tickets may be had from the secretary of the Guild at 6, John-street, Adelphi, W.C. 2.

LONDON IRISH MEDICAL GOLFING SOCIETY.—At this society's week-end meeting at Sandwich there were 63 entries for the Canny Ryall Cup, and the winner was E. T. Wright. E. T. McElligott and C. Petit tied for the O'Malley Cup, and Petit won on a replay. For the Lett Cup D. S. Gordon and E. T. Wright tied with E. S. A. Crawford and C. L. Wilson; Gordon and Wright won the replay. The Cahill Trophy was won by D. R. Wheeler, the Captain's Prize by E. T. Wright, the Juniors' Prize by R. L. Rea, the Hidden Nine by D. R. Wheeler, and the Eclectic Competition by W. Calwell and D. R. Wheeler (tie).

COLLEGE OF PESTOLOGY.—The annual dinner and ball took place at the Piccadilly Hotel on Nov. 1st. Owing to the illness of the new President, the Duke of Sutherland, the chair was taken by Sir Thomas Horder, who pointed out that the intermediate host between the microbe and the human being was the pest, and that to deal with this intermediary was everybody's business, and therefore nobody's. He related the work of the College to the problem of slum-clearance, for as long as slums existed it was impossible to free the country of pests. The toast of the Society was proposed by Captain W. S. Saunders, M.P., and responded to by Mr. Moore Hogarth, who traced the continued usefulness of the College and declared that we were a bug-ridden country, and that it would be impossible to get all the bugs of the metropolis into a container as large as the Tower of London.

PRESENTATION TO DR. JANE WALKER.—A dinner was held at the East Anglian Sanatorium, Nayland, Colchester, on Oct. 24th, to celebrate the seventieth birthday of Dr. Jane Walker, its principal. Dr. G. E. Soltau presided, and Dr. G. H. Metcalfe proposed the toast of Dr. Jane Walker. He said that the sanatorium, which was opened nearly thirty years ago, was known not only in Suffolk and East Anglia, but throughout the world. Dr. Vere Pearson spoke of the vitality and enthusiasm shown by Dr. Walker, not only in her medical work but in her interest in music, literature, and art. The chairman said that many of the former medical residents and matrons had desired to join in giving Dr. Walker a tangible expression of their feelings towards her. She handed a bag of gold from past and present patients and members of the staff of the sanatorium to Dr. Walker.

FINANCE OF THE MIDDLESEX HOSPITAL.—The report for 1928, which has just been issued, again shows a considerable expansion of work. At 6271 the number of in-patients treated to a conclusion was an increase of 759, and the average number of occupied beds was 340·18, compared with 329·45 in 1927. The increase is partially accounted for by the provision of facilities at the convalescent home for surgical cases at an earlier stage of convalescence. A decrease in costs has resulted, the average weekly cost of each in-patient having fallen by 1*s.* 7*d.* to £4 15*s.* 1·15*d.*, and the total cost per head from £15 1*s.* 4·46*d.* to £13 9*s.* 8·68*d.* The number of out-patients (52,580) is an increase of 3562. There was a fractional increase in the cost in this department, a greater proportion of the time of the dispensary staff having been required owing to the growth in the number of patients. The larger number of resident patients increased the expenditure by £1996 to £100,068, which the governors regard as very satisfactory in view of the cost of the contributory superannuation scheme. The total income went up from £80,177 to £83,515. The grant from the Hospital Saturday Fund fell from £4475 to £3230. The recommendations of a joint committee of the governors and the medical committee are resulting in better conditions for the nursing staff.

QUEEN ALEXANDRA'S HOSPITAL FOR OFFICERS.—The tenth annual reunion dinner of this hospital was held on Oct. 30th at the Hotel Cecil, under the chairmanship of Major W. B. Binnie, a former patient. Mr. Herbert Paterson read a message of good wishes from the Princess Victoria; Lord Waring proposed the health of the former patients, and Colonel F. R. Hybart, the senior officer, replied.

UNIVERSITY OF BIRMINGHAM DENTAL CLINICAL BOARD.—Four post-graduate lectures will be given at the Dental Hospital, Great Charles-street, Birmingham, at 5 P.M., on Thursdays, Nov. 14th and 28th, and Dec. 5th and 12th. The first lecture will be by Mr. Harold Round on Fractures of the Jaws. Further particulars may be had from the Clerk to the Board at the University.

A RADIUM CANCER CLINIC.—Lord Moynihan, President of the Royal College of Surgeons, last week opened a radium cancer clinic at Burnley Victoria Hospital, of which Dr. J. H. Watson has been appointed director. It is proposed that the clinic should have 1 g. of radium; the first instalment, already in use, consists of 340 mg.

A LICENSED VICTUALLER'S BED.—A bed in the Victoria ward of St. John's Hospital, Lewisham, has been endowed by the Blackheath Division of the Licensed Victuallers and Beersellers' Protection Society.

PRESENTATION TO A MEDICAL MAN.—Last week a presentation was made to Dr. G. S. Pollard on his retirement, after 23 years' service, as honorary medical director of Paulton Memorial Hospital, near Bristol. He has been a member of the medical staff for 43 years. The presentation, from the members of the medical and nursing staffs and the management committee of the hospital, consisted of an armchair, a cheque, and an album containing the names of the subscribers.

THE ROYAL FAMILY AND HOSPITALS.—On Monday Princess Marie Louise laid the foundation-stone of the new Queen Charlotte's Maternity Hospital at Hammersmith.—Last week Princess Louise, Duchess of Argyll, opened a new isolation hospital (60 beds) which has been built by the Hendon urban council, at an approximate cost of £70,000.—The new X ray department of Wembley Hospital has been opened by Prince Arthur of Connaught. The foundation-stone of the institution was laid exactly three years ago, and the hospital, which cost nearly £30,000, was opened free of debt. The accommodation is already insufficient, and plans are being made for enlargement.—On Thursday in last week the Duke of York opened a new pavilion of Grindon Hall Tuberculosis Sanatorium belonging to the corporation of Sunderland.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Nov. 11th.—5 P.M., WAR. Paper:—Lieut.-Colonel T. B. Layton: The Surgical Aspects of the Transport of the Wounded.

TUESDAY.—5 P.M., THERAPEUTICS. Communication:—Dr. J. H. Burn, Dr. S. Wokes, and others: The Use of Ergot. A discussion will follow. 8.30 P.M., PSYCHIATRY (at the Wellcome Historical Medical Museum, 54, Wigmore-street, London, W.). Presidential Address:—Sir Robert Armstrong-Jones: Superstition.

WEDNESDAY.—5.30 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Pathological Meeting preceded by a discussion on Complications of Operations for Piles, to be opened by Mr. Cecil Rowntree (President of the Subsection). Cases and Specimens:—Mr. Cecil A. Joll: Combined Abdomino-perineal Excision of the Rectum and Wertheim's Hysterectomy for Carcinoma of the Recto-vaginal Septum; Abdomino-perineal Excision of Rectum for Endometrioma. Mr. E. T. C. Milligan: Specimen Illustrating Early Carcinoma of the Colon; Two Cases Illustrating Peri-rectal Swellings. Mr. Lionel Norbury and others will also show specimens.

THURSDAY.—8.30 P.M., NEUROLOGY. Clinical Meeting at the National Hospital, Queen-square, W.C.

FRIDAY.—5 P.M., BALNEOLOGY. Paper: Dr. G. L. Kerr Pringle. 8 P.M., OBSTETRICS. Specimens: Mr. Clifford White will show two specimens. Short Papers:—Dr. J. Estcourt Hughes: A Case of Hydatidiform Mole with Multiple Small Syncytial Infarction of the Lungs. Dr. Kathleen Vaughan: Maternal Mortality and its Relation to the Shape of the Female Pelvis. Discussion on the Report of the Departmental Committee on the Training of Midwives. Opener: Dr. Herbert R. Spencer. 8.30 P.M., ELECTRO-THERAPEUTICS. Paper:—Dr. Jessie E. Sheret: Massive Collapse of the Lungs.

BIOCHEMICAL SOCIETY.

SATURDAY (to-day), Nov. 9th.—2.30 P.M. (in the Department of Physiology, University of Liverpool): 129th Meeting.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Nov. 11th.—8.30 P.M., Discussion on the Relative Value of the Different Methods of Diagnosis in Gastric Disease, to be introduced by Dr. J. A. Ryle, Dr. Harrison Orton, and Prof. E. C. Dodds.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, Nov. 12th.—5 P.M., Dr. G. F. Still: The History of Pædiatrics in the Seventeenth and Eighteenth Centuries. (Last FitzPatrick Lecture.)
THURSDAY.—5 P.M., Rt. Hon. H. A. L. Fisher: An Oxford Movement (Lloyd Roberts Lecture).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
THURSDAY, Nov. 14th. — 5 P.M., Mr. R. P. Rowlands: Review of the Surgery of the Gall-bladder and Bile-ducts. (Bradshaw Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, Nov. 11th, to SATURDAY, Nov. 16th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Mon., 5 P.M., lecture by Dr. E. P. Poulton on (1) Treatment for the Common Cold, and (2) Recent Work on Bright's Disease. No fee. Two lectures especially suitable for M.R.C.P. candidates: Tues., 8.30 P.M., Dr. O. L. V. de Wesselow: Diabetes and Insulin. Fri., 8.30 P.M., Dr. Bernard Myers: Purpura and its Treatment.—CHARING CROSS HOSPITAL, W.C. Wed., 2 P.M., Demonstration of Gynæcological Cases by Dr. Everard Williams. No fee.—ST. PAUL'S HOSPITAL, Endell-street, W.C. Fri., 4.30 to 7.30 P.M., Demonstration of Genito-urinary Cases and Cystoscopic Examinations by Mr. W. K. Irwin. No fee.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Post-graduate Course in Medicine, Surgery and Gynæcology, every afternoon and some mornings for two more weeks.—LONDON LOCK HOSPITAL, Dean-street, W. Post-graduate Course in Venereal Disease. Daily every afternoon and evening. Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 11th.—10 A.M., Dr Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Wards.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw, Medical Out-patients. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. Dr. Scott Pinchin: Medical Out-patients.
THURSDAY.—11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department. 4.30 P.M. (Lecture), Dr. Dowling: Dermatological Operations.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.
SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.
Daily, 10 A.M. to 5 P.M., Medical, Surgical and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

SOUTH-WEST LONDON POST-GRADUATE SOCIETY, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Nov. 13th.—4 P.M., Dr. C. E. Lakin: Demonstration of Cases.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 11th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations. 4.30 P.M.: Demonstration on Practical Neurology by Dr. L. R. Yealland.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 11th.—12 noon, Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Mr. Leslie Paton: Affections of Optic Nerves.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Tumours of the Cerebral Hemispheres.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Ocular Palsies.
FRIDAY.—12 noon, Dr. Purdon Martin: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Greenfield: Demonstration of Cerebral and Spinal Tumours.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.
TUESDAY, Nov. 12th.—5 P.M., Dr. Wilfred Fox: Nævi.
THURSDAY.—5 P.M., Dr. H. G. Burford: Pathology Demonstration.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 13th.—4.30 P.M., Sir Thomas Carey Evans: Stone in the Bladder, with Special Reference to Treatment by Litholapaxy.

KING'S COLLEGE FOR HOUSEHOLD AND SOCIAL SCIENCE, Campden Hill-road, W.
FRIDAY, Nov. 15th.—5 P.M., Prof. V. H. Mottram: Human Nutrition. (Fifth of six lectures.)

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.
MONDAY, Nov. 11th.—5 P.M., Prof. Leonard Hill: Sunlight and Health.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road.
FRIDAY, Nov. 15th.—4 P.M., Mr. W. A. Mill: Acute Suppuration of the Middle Ear.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Nov. 12th.—3.15 P.M., Mr. C. S. L. Roberts: Prolapse in Women.

PEOPLE'S LEAGUE OF HEALTH, 12, Stratford-place, W.
FRIDAY, Nov. 15th.—6 P.M. (at the Medical Society of London, 11, Chandos-street, W.), Mr. Harold Cox: The Multiplication of the Unfit.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 13th.—4 P.M., Dame A. Louise McIlroy: The Influence of Pathology Upon Maternal Welfare.

ROYAL ANTHROPOLOGICAL INSTITUTE.
WEDNESDAY, Nov. 13th.—5.30 P.M. (in the Polytechnic Hall, Great Portland-street Extension), Sir Arthur Keith: Race Building—Past and Present.

ANCOATS HOSPITAL, Mill-street, Manchester.
THURSDAY, Nov. 14th.—4.15 P.M., Mr. P. McEvedy: Diseases of Veins.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, Nov. 15th.—3.30 P.M., Mr. H. B. Yates: Dyspepsia of Biliary Origin.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 12th.—4.15 P.M., Dr. T. H. Oliver: Diabetes.
FRIDAY.—4.15 P.M., Dr. H. Herd: Behaviour Disorders of Childhood.

Appointments.

MORTON, E. F., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Topsham District of the County of Devon.
MCMILLAN, A. J., L.R.C.P. Lond., M.R.C.S., Tuberculosis Officer for North Devon.
RATNER, E., M.B., Ch.B. Manch., Assistant Medical Officer of Health, Stockport.

Vacancies.

For further information refer to the advertisement columns.

Altrincham General Hospital.—H.S. At rate of £125.
Barnsley, Beckett Hospital, &c.—H.P. £140.
Barry Surgical Hospital.—H.S. At rate of £200.
Bedford County Hospital.—H.S. At rate of £175.
Birmingham City.—Asst. M.O. £750.
Birmingham, Dudley-road Hospital.—Surgeon. £700.
Birmingham, Queen's Hospital.—Jun. R.S.O. £100.
Birmingham Royal Cripples Hospital.—H.S. At rate of £200.
Birmingham, Highbury Hospital.—Res. M.O. £350–£400.
Blackburn and East Lancashire Royal Infirmary.—Fourth H.S. £130.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200. Also Clin. Asst. to Ear, Nose and Throat Dept. £100.
Brighton, Hove and Preston Dispensary and Hove Hospital.—Hon. Surgeon.
Brighton, Royal Sussex County Hospital.—Sen. Asst. Path. £350.
Church Army Medical Mission.—Lady Doctor.
City of London Hospital for Diseases of Heart, &c., Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.
Bristol, Stoke Park Colony.—Director of Medical Services. £1200.
Derby County Borough.—M.O.H. £1100.
Durham County Council.—Asst. Welfare M.O. £600.
Elizabeth Garrett Anderson Hospital, Euston-road.—H.P. Obst. Asst. Three H.S.'s. Each at rate of £50. Also Clin. Assts.
Great Yarmouth General Hospital.—Jun. H.S. £125.
Harrogate Infirmary.—Sen. and Jun. H.S. At rate of £150 and £100 respectively.
Hertford County Hospital.—H.P. At rate of £150.
Ipswich, East Suffolk and Ipswich Hospital.—Hon. Ophth. Surgeon.
Ipswich, Heathfields Infirmary, &c.—Asst. Res. M.O. £250.
Islington Dispensary, 303, Upper-street, N.—Asst. Res. M.O. £220.
L.C.C. Mental Hospital Service.—Eighth Asst. M.O. £300.
Leamington Spa, Warneford General Hospital.—Res. H.S. £165.
Leeds General Infirmary.—M.O. in charge of Radium Dept. £600.
Liverpool, David Lewis Northern Hospital.—Hon. Med. O. for Cardiographic Dept. Also Two Jun. Anæsthetists. £75.
Liverpool Royal Babies Hospital, Woolton.—Res. M.O. At rate of £90.
London Jewish Hospital, Stepney Green, E.—Res. M.O. Also Jun. Res. M.O. At rate of £150 and £100 respectively.

London Skin Hospital, 40, Fitzroy-square, W.—Hon. Phys. and Hon. Pathologist.
Manchester City.—Asst. Tuber. O. £650.
Manchester, Salford Royal Hospital.—H.P. At rate of £125.
Mothers' Hospital, Clapton, E.—Hon. Asst. Obstet. S.
National Association for the Prevention of Tuberculosis, 1, Gordon-square, W.C.—Asst. Med. Commissioner. £700.
National Hospital. Queen-square, W.C.—Res. M.O. £200.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Northwood, Mount Vernon Hospital.—H.S. for Cancer Section. £200.
Paddington Green Children's Hospital, W.—H.S. At rate of £150.
Queen's Hospital for Children, Hackney-road, E.—Surgeon to Ear, Nose and Throat Dept. Also H.S. At rate of £100.
Radium Institute, Riding House-street, W.—Assistant to Medical Department. £600.
Ross Institute.—Bacteriologist for South Africa.
Royal Chest Hospital, City-road, E.C.—Clin. Assts.
Royal College of St. Katharine, Poplar, E., Maternity and Child Welfare Centre.—Asst. M.O. £1 11*s.* 6*d.* per session.
Royal Free Hospital, Gray's Inn-road, W.C.—H.S.'s, H.P.'s, &c. Each £150. Second H.P. and Obstet. Dist. Asst. £100. Surg. Reg. £200. Half-time Gynæcological Reg. and Med. Reg. Each £100.
St. John's Hospital, Lewisham, S.E.—Phys. to Children's Dept. Also Cas. O. At rate of £100.
St. Peter's Hospital, 74, Vallance-road, Whitechapel, E.—Med. Supt. £900.
Sheffield, Children's Hospital.—H.P. Also Third Res. M.O. Each £100.
Sheffield, Jessop Hospital for Women.—Asst. H.S. At rate of £100.
Sheffield Royal Infirmary.—Clin. Asst. to Ophth. Dept. Also Clin. Asst. to Med. Depts. Each £250. Also H.S. £80.
Sheffield University, Faculty of Medicine.—Lecturer in Pathology. Also Demonstrator in Pathology. Each £500.
Southampton County Borough Isolation Hospital.—Res. M.O. £360.
Southampton, Royal South Hants and Southampton Hospital.—Asst. H.S. and Res. Anæsthetist. At rate of £140.
South London Hospital for Women, South Side, Clapham Common, S.W.—Clin. Asst. 1 gn. per attendance.
West London Hospital, Hammersmith-road, W.—H.P., H.S. Aural and Ophth. H.S. and Asst. Cas. O. Each at rate of £100. Also Asst. Surgeon Dentist.
Windermere, Ethel Hedley Hospital for Crippled Children.—Res. H.S. At rate of £150.
Wolverhampton Royal Hospital.—Asst. Pathologist and Pathological Registrar. £350.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Holyhead (Anglesey), Ryde (Isle of Wight), and at Wokingham (Berks).

Births, Marriages, and Deaths.

BIRTHS.

RUSSELL.—On Oct. 26th, the wife of Dr. N. L. Russell, of "Bredon," Alverstoke, of a daughter.

SHEPPARD.—At Rangoon, Burma, on Oct. 28th, to Edith T. Sheppard (*née* Marshall), M.B., B.S., wife of Lieut.-Col. A. L. Sheppard, I.M.S.—a son.

DEATHS.

GALLIMORE.—On Nov. 1st, at Leam-terrace, Leamington Spa, Thomas Gallimore, L.R.C.P., L.R.C.S., in his 80th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

RADIUM AT NORFOLK AND NORWICH HOSPITAL.—It is stated that two members of the honorary surgical staff of this hospital have privately acquired a small quantity of radium, and that hospital patients are now being treated with it.

LONDON VOLUNTARY HOSPITALS.—King Edward's Fund has issued a review of the work and finance of 136 London hospitals in the last five years, which shows an increase during the period of 14 per cent. in the daily average of in-patients, of 11 per cent. in out-patients, and 20 per cent. in out-patients' attendances. At the end of 1928 there were 15,640 beds, or 1600 more than when the Voluntary Hospital Committee made its inquiry in 1924. The total income in 1927 of £3,267,000 rose in 1928 to £3,424,000. To this must be added £978,000 received for endowment and building, making a total for 1928 of £4,402,000 for all direct hospital purposes. Subscriptions and donations have largely increased during the five years, and patients' payments have reached a higher total in each year. The compilers of the review say that so far from the voluntary hospitals "fighting a losing battle," the very opposite is the truth, the statistics showing that they are strengthening their hold upon the confidence of the public.

Notes, Comments, and Abstracts.

THE LOCAL GOVERNMENT ACT IN RELATION TO VOLUNTARY HOSPITALS.*

BY H. P. NEWSHOLME, M.D., F.R.C.P. LOND.,
MEDICAL OFFICER OF HEALTH, CITY OF BIRMINGHAM.

APART from consultation between local authorities and the representatives of the governing bodies and staffs of voluntary hospitals in regard to the general scheme of transfer of institutions, the Local Government Act contains no direct indication of any repercussion on the position of the voluntary hospital, but the approaching union between poor-law and municipal institutions offers possibilities of mutual assistance, coöperation, and coördination between the municipal and the voluntary hospitals. I am not an advocate of the municipalisation of the voluntary hospital. The Local Government Act cannot conceivably have any such result, even remotely. The ideal should be the concurrent maintenance of voluntary and municipal institutions under conditions of friendly association, allowing each to learn from, and to coöperate with, the other

Hospital Officers.

Administrative.—The first essential for coöperation is community of knowledge and of interests, and readiness to exchange information in ways free from the stiffness of officialism and the diplomatic implications of official conversations. The Incorporated Association of Hospital Officers should form an admirable channel for this if its membership could be extended to include the officers of municipal and poor-law hospitals.

Social Workers.—The hospital almoner is found on the staff of some, but not all, voluntary and public hospitals. Her work is profoundly important for the effectiveness of the hospital, both by probing into and remedying domestic hindrances to recovery, and by maintaining supervision after discharge from hospital, as well as protecting the hospital finances. I look forward to the day when every hospital will have its social service section represented by an almoner's department. By the pooling of information through personal contact, as well as by the free discussion of principles and procedure, there should be established a great network of social service in relation to the cure of disease, corresponding with the great network of social services which public authorities have established for the prevention of disease. That correspondence should, in its turn, pass into a further stage of close linkage between the two. I should, for example, like to see the almoner's department making use of the unrivalled knowledge of the local authority's health visitors about the home conditions, difficulties, and idiosyncrasies of the working classes, to maintain a degree of after-care which is at present impracticable.

Nursing Staff.—We are all competing keenly against each other in seeking candidates to be trained as nurses in our several institutions, and that competition at present implies a good deal of waste and duplication of effort. I should like to see the day when our institutions, voluntary and municipal, will collaborate rather than compete in evolving a scheme, first of joint training for the preliminary knowledge which all require, and then of interchange of nurses, which shall make fuller and more even use of the magnificent facilities for all-round training which such a pooling would imply. The difficulties, both personal and administrative, of evolving such a scheme on any large scale are obviously enormous. If, however, the present shyness of entering the nursing services should increase, sheer necessity may one day drive us to the necessary degree of inventiveness. It is possible that a scheme for the training of nurses might be evolved on lines somewhat analogous to those followed by the training of medical students, with perhaps one or more central hostels into which would be drafted the probationers for the various hospitals coöperating in the scheme. Whether those probationers would be selected in the first instance by the matrons of the several institutions individually or coöperatively, or in some other way, would be a matter for consideration. In such hostels the probationer would receive the preliminary training common to all nursing institutions, and would then be detailed to one or other of the coöperating institutions to continue her training. Whether and to what extent a system of exchange of nurses between one institution and another would be practicable is not a point into which I can enter. Such a scheme would

* Substance of a paper read before the Midland Branch of the Incorporated Association of Hospital Officers at Birmingham on Oct. 24th, 1929.

only be an extension of arrangements which are already in effect for individual institutions.

Use of Hospital Beds and Out-Patient Departments.

It is possible to visualise a number of directions in which coöperation would be useful in the allotment of hospital beds. For example, it would be of value to any given hospital to know what medical, surgical, and special department accommodation is available at any given moment at other hospitals in the same area. It is conceivable that a central information bureau, receiving regular and frequent information—say twice a day—might be a source of convenience for all hospitals. Such a bureau might with advantage develop into a central clearing-house for the purpose of minimising the long periods of waiting for admission to particular hospitals. This problem of the long waiting-list is one of immediate practical importance. I do not anticipate that we are likely to see any radical alterations in our present arrangements for the interchange of patients between hospital and hospital. It may well be considered, however, whether the duplication of special departments on a large scale in general hospitals is as desirable as the alternative of making use to a greater extent of the corresponding special hospitals, and of maintaining at the general hospitals only small special clinics for consultation purposes rather than for systematised and detailed treatment. In some directions, —e.g., in the use by agreement of some particular hospital for treatment by X rays, instead of the multiplication of X ray treatment plants at a number of hospitals—simplification and saving of expense could result, as well as the ability to provide plant on a scale which is impossible when each hospital attempts to make its own provision.

Hospital beds are to be considered not merely from the point of view of treating patients, but also from that of training medical students. I should like to see the doors of all well-run hospitals, general and special in areas serving a medical school, thrown open to medical students under conditions implying systematic instruction in the direction in which the hospital in question is peculiarly capable of enriching the student's experience.

Occasional visits to out-patient departments in various parts of the country leave an impression that there are still faults to be found—long waiting, too casual directions in regard both to procedure and to treatment, and occasionally even cavalier behaviour by both professional and non-professional staff. The cause at present seems to be indefiniteness of control. What is needed is not so much technical knowledge as the acknowledged responsibility of some one individual for securing effective and kindly discipline in the out-patient department. The qualities needed would be those of a competent business man, combined with those of a capable housewife, and mellowed by an imagination quick to grasp the many anxieties and preoccupations of the applicant for help. There should be a possibility of pooling knowledge of the details of working of out-patient departments.

Joint Purchase of Supplies, Joint Laundries Joint Workshops.

There are no doubt two aspects to the question of joint purchase of stores and provisions by a group of institutions. While the joint purchase may readily imply a substantial saving in costs without any necessary loss in quality, it may not meet the special needs or the particular tastes of some of the coöperating institutions. Granted appropriate safeguards in the purchase of particular items, however, there is ground for careful consideration of the policy of joint purchase as already applied, for example, by a considerable combined group of municipal and voluntary hospitals in Birmingham. Joint laundry work is already in force for the municipal hospitals under the Birmingham Public Health and the Maternity and Child Welfare Committees. A case might also be made out for joint workshops for the preparation of a variety of surgical apparatus. With a large enough central workshop it should be possible to deal with the individual varieties of a particular type of appliance most favoured by individual hospitals.

Treatment of Mental Disease.

Scarcely any aspect of medicine is so fundamentally important and so much neglected as the detection and treatment of mental disease at its inception. Every important town should have in connexion with the out-patient departments of most if not all of the larger general hospitals a psychiatric clinic, run in close collaboration with the mental hospitals of the area; associated with this there should be a certain number of beds for the in-patient observation or treatment of appropriate cases. Such provision would immediately attract a class of readily curable patients who at present, and rightly, refuse to regard themselves as insane, and who consequently delay in seeking the all-important treatment which might save them later from a long period of confinement in a mental hospital. It is my earnest hope that some provision may be made on these lines for a very unfortunate and at present greatly neglected section of the population. The provision of such psychiatric clinics at general hospitals would have a profoundly important reverberation on the work of other departments of the hospital. Almost all physical disease has what might be called a mental overlap, an emotional state with a mental sensitiveness which adds greatly to the symptoms and delays recovery. The influence of the psychiatric clinic on the attitude towards disease in medical and surgical wards would tend towards a quicker cure, with less prospect of pronounced relapse or recurrence, for it would help the patient to clear up the mental concomitants of his physical disease. Moreover, it might well be that any tendency towards a return of those mental concomitants, the significance of which the patient had learnt, would tend to make him watchful and eager to seek early treatment.

Measures Towards the Prevention of Disease.

While hospitals, whether municipal or voluntary, have developed to a high degree of efficiency their powers of curing disease, they are at present only in the very early stages of developing a system for the maintenance of health, the prevention of disease, and the prevention of recurrence of cured disease.

(*a*) More specific, detailed, and systematic instructions could be given to individual patients as to the way in which they should conduct their lives after discharge from in-patient or out-patient treatment, with a view of minimising the risks of relapse or of progression of disease, and of detecting the further deviations from the normal at the earliest moment. Such advice is given even now, chiefly by ward sisters and resident staff; but it is usually verbal, and therefore too readily misunderstood or forgotten; and it is liable often to be rather casual. Such instructions could be rendered much more effective by a system of after-care.

(*b*) Ill-health has led frequently to degeneration of the patient's habits of body and mind. Patients should therefore have instructions on discharge, by individual tuition, by leaflets, or otherwise, on the bearing of firmly-established mental and physical habits, on stability of character and effectiveness of personality, and the influence of a desultory habit mechanism in rendering character ineffective, and in diminishing social value.

(*c*) Restoration of physical health releases fresh energies for the patient, and unless he is himself made aware of this, and warned of the importance of harnessing these energies to worthy ends, he may turn back to bad habits of body and mind formed during and as a result of ill-health, and may thus use these energies in directions tending to degradation. It may be that the hospital chaplain rather than the lay staff should face this problem; but it certainly should not be left unfaced, and I should not exempt the medical and nursing staff from their share of responsibility. I should like to lay particular emphasis on this need for recognising that the patient is not merely a physical body to be healed, but an individual with a personality whose point of equilibrium must necessarily be profoundly altered by the cure of his body, an individual with as urgent a need for adjustment of his personality to the now healthier body as was previously his need for the cure of that body.

(*d*) In out-patient departments of municipal and voluntary hospitals dealing with mothers and children much more advice could be given on training in habits, on character training, and establishment of mental stability. These are directions in which the modern view of the close interdependence of physical and of mental health require systematic elaboration in hospital practice.

A Problem with Two Faces.

The problem with which we are met—that of facing the ultimate alternatives of absorption into one service, of friendly coöperation between two types of services working side by side, or of rigidly separate services—the problem found in many spheres of individual, social, industrial, political and even religious life. It appears in the antithesis of individualism and socialism, of the small shop and the multiple emporium, of the self-contained business and the large combine, of the individual and the group, of self-expression and group membership, of Quakerism and Catholicism. The system of sharing experience, of socialism, of State service has inherent in it the defect that the individual, protected as he is from elimination by his membership of a large system, can subside too readily to a level of easy attainment below his full capacity, if he does not maintain his idealism of aim. The system of standing on one's own feet, of individualism, of the separate independent unit, has equally an inherent weakness. The representative of the system symbolised by the voluntary hospital may be liable to an over-absorption with his own affairs, and unconcern with the difficulties of neighbours, which can lead to a form of selfishness, preventing him from exercising the breadth of influence which might result from a nearer approximation to the system of community of

action. We need, therefore, be neither surprised nor troubled at the difficulties experienced in attaining a satisfactory working arrangement between the voluntary hospital unit on the one hand, and the group of State service units on the other. It is a difficulty which in varied disguises is inherent in human nature. As human nature tends when in equilibrium to find a happy mean between the two extremes, so we may expect to find the solution of our particular difficulties.

FIRST-AID TREATMENT OF BURNS BY TANNIC ACID.

PROVISIONAL instructions for applying the tannic acid treatment of burns under first-aid conditions have been drawn up by Mr. W. C. Wilson, author of the green book on this subject (No. 141 of the Medical Research Council Special Report Series), which was summarised in our columns last week. The instructions, which are included as an appendix to the report, have been modified by him in some respects as the result of helpful criticisms made by H.M. Medical Inspector of Mines, and by the professors of surgery at St. Thomas's Hospital and University College Hospital, London, to all of whom the original draft was submitted by the Medical Research Council. It is hoped that these instructions may prove useful, until fuller experience of the method has been gained in mines and other places where burning injuries are not uncommon, and where immediate hospital treatment may be unavailable.

The treatment here described is an emergency first-aid measure to be employed in cases especially where the patient is to be transported subsequently to hospital, and where the circumstances are such that some time—e.g., more than three hours—must elapse before the patient can reach hospital. If speedy removal to hospital is possible, first-aid treatment should be omitted, and the patient dispatched without delay.

A First-aid Unit.

A first-aid unit consists of the following articles :

(1) Two 2-pint enamel measures graduated in ounces.

(2) Two glass rods.

(3) Fifty packets of tannic acid powder ; each packet contains 110 grs. of powder.

(4) A bottle containing tablets of corrosive sublimate. Each tablet contains 8·75 grs. Such tablets are stocked by all chemists.

(5) Five dozen packages of sterilised white surgeon's lint ; each package consists of a piece of lint covered by a layer of gauze and wrapped in Kraft paper. The lint is in three forms : (*a*) A piece measuring 20 inches by 30 inches ; this package is labelled "Trunk." (*b*) A bandage 4½ inches broad by 3 yards long ; this package is labelled "Bandage." (*c*) A face-mask measuring 24 inches by 12 inches. In the mask a rectangular opening 7 inches by 1½ inches is cut to expose the eyes, and horizontal slits are cut 3 inches and 3½ inches long as openings for the nose and mouth respectively. The package is labelled "Face."

The unit contains one dozen "Trunk" packages, one dozen "Face" packages, and three dozen "Bandage" packages.

(6) Twelve rolls of white absorbent wool.

(7) Eight dozen gauze (open wove) bandages.

(8) A jar of vaseline and a flat stick for applying the vaseline.

Instructions in the Application of Tannic Acid.

(1) Remove all clothing from the burned area in order to make a rough estimate of the surface extent of the burn. Take great care that the patient does not become chilled.

(2) Do not attempt any cleansing of the burned area.

(3) Make up the tannic acid solution. In 2 pints of water dissolve one tablet of corrosive sublimate and four packets of tannic acid powder. Stir with a glass rod till all powder is dissolved. The solution must be warm when applied, otherwise the patient becomes chilled. This solution is antiseptic. There is no necessity to sterilise measures, glass rods, or powder. The following is a rough guide to the quantities of solution and lint required in the case of a male adult of average size : (*a*) The lint in a package labelled "Trunk" will cover the entire front or entire back of the trunk and requires *one* pint of solution. (*b*) The lint in a package labelled "Bandage" will cover one entire arm, and requires *half* a pint of solution. Two bandages cover one entire leg and require *one* pint of solution. (*c*) The lint in a package labelled "Face" will cover the face, neck, and sides of head, and requires *six ounces* of solution.

(4) According to the surface extent and regional distribution of the burn, select the number and type of packages which will provide enough lint to cover over the burned area. Remove the lint from the packages, soak it in the tannic acid solution, wring out gently, and apply the smooth side of the lint to the burned area. The hands should be washed thoroughly with soap and water before the lint is touched. Cover the lint with a layer of wool and fix with a gauze bandage.

(5) Burns of the face. *Take care that no tannic acid solution enters the eyes.*

Protect the eyes in the following way : Tell the patient to close his eyes and keep them closed. With the flat stick smear a *thick* layer of vaseline over the eyelids, eyebrows, and for some distance round the eyes. Cover the vaselined area with wool. Soak the face-mask in the solution, wring out *firmly*, squeezing out all excess solution, and apply to the face, leaving the regions of the eyes, nostrils, and mouth exposed through the openings cut in the mask for this purpose. Secure with a gauze bandage round the head and neck. The openings in the mask can be widened if necessary, or a face-mask can be improvised from a piece of lint in a "trunk" package by making the necessary openings.

Sterilisation and Storage.

(1) *Lint.* The packages with a covering of Kraft paper have previously been sterilised by steam at 15 lb. pressure for 20 minutes and dried. If the packages are kept clean and dry the lint will remain sterile for long periods.

(2) The whole unit is contained in a wooden box, which should be stored in a dry place. The lint packages and packets of tannic acid powder must be kept dry and clean. The packets of tannic acid powder are best kept in a separate tin box with a tightly fitting lid.

ENERGEN FOODS CO., LTD.

WE have received from this company forms of certificate which, upon signature by a medical man, will serve as an authority to any retailer to supply Energen Foods at a special reduction to the patient while the patient remains under treatment. The company claim that their wares are now generally recognised by the medical profession as useful in the dieting of diabetic and obese subjects, and those suffering from various digestive disorders, and a reduction of price will bring these foods within reach of panel patients.

JENNER AND THE CANADIAN PIRATE.

UNDER this heading the Hon. William Renwick Riddell, the Canadian Justice of Appeal, contributes an interesting story to the *Canadian Journal of Medicine and Surgery* for October, which shows that vaccination has been beneficent in other directions than that for which the originator of the practice intended it. Some will have heard that Napoleon, when about to refuse a request for the release of certain English prisoners, remarked, on being reminded by Josephine that the petitioner was Jenner, "Ah, we can refuse nothing to that name," and at that time Jenner's fame was great on the continent. In 1803, for example, the King of Spain equipped an expedition intended to diffuse knowledge of vaccination throughout the Spanish dominions in the new world, with the result that the practice spread rapidly ; it was owing principally to this that the "Canadian Pirate," Jeremiah Powell, a son of William Dummer Powell, afterwards Chief Justice of the Court of King's Bench, Upper Canada, was released from a long term of what would have been practically slavery. The story, as Mr. Justice Riddell tells it, is as follows : Judge Powell married the daughter of one Dr. John Murray of Norwich, who was a close friend of Jenner. Jeremiah was placed by his father in a counting-house in New York, but, being of a restless nature, among other escapades, he took part in an expedition to free Venezuela from Spanish rule. He was captured, and sentenced to ten years' imprisonment in the Castle of Omoa, in the unhealthy province of Mexico, some of his colleagues being executed as pirates. Judge Powell, after an unsuccessful appeal to the Spanish Ambassador for his son's release, sailed to London with the intention of petitioning the King of Spain, and in the meantime had written to his brother-in-law, Charles Murray, in London. Charles Murray at that time had received a letter from Jenner referring to the success of the Spanish venture in vaccination, to which he replied referring to the sentence passed on his nephew, and mentioning the episode of Jenner's success with Napoleon, an episode that seems hitherto not to have been chronicled. He believed that Jenner might "have again the God-like satisfaction of being the means of setting the prisoner free." Jenner accordingly gave Judge Powell letters to the Court at Madrid, in response to which Jeremiah, the "Canadian Pirate," obtained his freedom. This the young man did not long enjoy, for shortly afterwards he was lost at sea, neither ship nor passenger being ever heard of again.

NEW LABORATORIES AT SHEFFIELD.—The students of the University of Sheffield are devoting the proceeds of this year's "rag" to the equipment of the new laboratories which are being erected at the Royal Infirmary.

Schorstein Lecture

ON THE

PRECURSORS OF CARCINOMA OF THE STOMACH.

Delivered at the London Hospital on Nov. 8th, 1929,

BY ARTHUR F. HURST, M.D. OXF., F.R.C.P. LOND.,
SENIOR PHYSICIAN TO GUY'S HOSPITAL.

EVERY year about sixteen thousand people die in Great Britain from cancer of the stomach. It is the cause of death in 5 out of every 100 people dying after the age of 40, and accounts for about one-third of all deaths from carcinoma. Even with the most modern methods of diagnosis the disease is rarely recognised sufficiently early to make it possible for a radical operation to be performed, and up to now treatment with deep X rays and with radium has met with little or no success. It is indeed doubtful whether permanent recovery occurs as the result of treatment in more than 1 or 2 per cent. of all cases of carcinoma of the stomach. So much progress has been made in the diagnosis of carcinoma of the stomach and in the technique of gastrectomy that, if all individuals suffering from suspicious symptoms were thoroughly examined without delay, many more cases could be operated upon with some hope of success. But even in the hands of the most experienced and skilful surgeons the prospects of cure would remain comparatively poor, so insidious is the onset of the disease, and so latent does it remain in its early stages.

It is clear that it is to prophylaxis rather than to improved methods of diagnosis and treatment that we must look for any real diminution in the high death-rate from carcinoma of the stomach. In my opinion such prophylaxis is possible, because I believe that carcinoma never invades a healthy stomach.

The actual development of carcinoma must, I suppose, be due either to a constitutional and perhaps inherited liability to the disease, or to the chance invasion of the individual by some external stimulant, as otherwise it would be impossible to explain why everybody suffering from the disorders of the stomach which predispose to malignant disease do not develop cancer. But until something is discovered which may make it possible to deal with this unknown exciting factor, our attention should be concentrated on the recognition and adequate treatment of the predisposing conditions. If this is done, I feel confident that the incidence of carcinoma of the stomach will in the next few years be greatly reduced.

I propose to approach the subject from a clinical standpoint before discussing the pathological evidence, because it was a study of the results of our clinical investigations in a series of cases of carcinoma of the stomach, undertaken in the preparation of a paper on the early diagnosis of carcinoma of the stomach for the International Conference on Cancer held in London last year,[1] which led me to the conclusions which I summarised on that occasion and which I propose, in the light of further experience, to discuss to-day.

ACHLORHYDRIA.

Fifty years ago van den Velder[2] discovered that carcinoma of the stomach is often associated with the complete absence of free hydrochloric acid from the gastric contents. Using the Ewald test-meal it was subsequently found that achlorhydria was present in about 80 per cent. of cases. The introduction of the fractional test-meal by Rehfuss in 1914 made is possible to recognise the presence of small quantities of free hydrochloric acid at one or more stages of digestion, which would have been missed by a single intubation. When this method was used, complete achlorhydria was found in only 50 per cent. of cases from the Mayo Clinic collected by Hartman[3] and in 65 per cent. of 74 cases at Guy's Hospital and New Lodge Clinic.

It has always been assumed that the achlorhydria is a result of the carcinoma, although none of the numerous theories which have been proposed to explain its occurrence appeared to be satisfactory. A study of the data obtained in our cases, and of those published by other investigators, has convinced me that this assumption is unjustified, and that the achlorhydria is a result of chronic gastritis, which precedes the onset of the carcinoma, and is in fact the most common predisposing condition.

I have never seen a case of carcinoma in which free hydrochloric acid was present at an early stage and disappeared as the disease advanced. I have also been unable to discover a single record of such a case, and not one of the numerous physicians with whom I have discussed the question has ever made such an observation. I have seen three cases of gastric ulcer in which a test-meal was given both before and after the onset of malignant degeneration. Hyperchlorhydria was present in two, and a normal curve of acidity was obtained in the third; in each case the degree of acidity was undiminished when the carcinoma had developed. The following is the history of the first case.

Carcinomatous Degeneration of Chronic Gastric Ulcer whilst under Observation.—A man of 66 had had typical symptoms of gastric ulcer for four years. On admission to New Lodge Clinic on Feb. 23rd, 1924, the diagnosis was confirmed by the discovery with the X rays of a large crater on the lesser curvature; this was associated with hyperchlorhydria and the constant presence of occult blood in the stools. He was given the usual treatment, and all symptoms disappeared within a week. He returned for re-examination on April 11th and again on May 18th; the X rays showed that the crater was much smaller, but as occult blood was still present I advised a continuation of strict treatment. He returned for the third time on June 22nd. He felt and looked strong and well, had gained 5 lb. in weight since his first admission, and had had no trace of indigestion. At this stage I thought that the small deformity still seen with the X rays must represent the scarred depression in the pancreas produced in the healing of the ulcer. Everything else seemed so satisfactory that I did not feel justified in advising operation simply because a trace of occult blood was still present in the stools.

Early in August, for the first time since the commencement of treatment, he experienced pain; it was quite different in character from the old ulcer pain, and was accompanied by nausea and anorexia. No relief followed careful dieting, and he returned to the clinic on August 31st. He had gained another 4 lb. in weight since June. Nothing abnormal was felt on abdominal examination. Occult blood was still present in the stools, and a most remarkable change had taken place in the X ray appearance in the nine weeks which had elapsed since the last examination. Instead of a very small niche with a smooth outline there was a large irregular deformity which was unmistakably due to malignant disease. The hyperchlorhydria was still present in undiminished degree.

A few days later Mr. L. Bromley performed a partial gastrectomy. A large thick scar was found on the lesser curvature, its centre forming a smooth-walled depression in the pancreas. Microscopical examination showed that carcinomatous changes were occurring on one side of the scar, and that the neighbouring mucous membrane was becoming infiltrated. There were no enlarged glands or secondary deposits. In spite of radiotherapy signs of recurrence appeared seven months later.

There can be little doubt that the persistent occult blood was due to the fact that malignant degeneration had already begun in March or April, probably before the ulcer had completely healed. This sign, therefore, preceded the earliest symptoms by five months and the earliest radiological changes by at least three months, and no diminution in gastric secretion had occurred in six months.

Mr. A. J. Walton[5] has stated that he has observed the acidity diminish when a chronic gastric ulcer became malignant. He tells me, however, that on re-examining the data which led him to make this statement, he discovered that the observations had been incorrectly recorded, and that he has as a matter of fact never observed such an occurrence.

I only know the history of two cases in which a test-meal had been given before as well as after the

development of carcinoma of the stomach associated with achlorhydria, and in both achlorhydria was already present on the first occasion.

In February, 1905, Alexander[6] was consulted by a man of 47, who gave a two years' history of epigastric discomfort and nausea; he was found to have achlorhydria, but no other evidence of organic disease. He derived some benefit from the administration of hydrochloric acid. In April, 1908, he began to have severe pain, and in May was found to have an inoperable growth of the stomach.

I am indebted to Dr. R. A. Veale for the notes of the second case.

A woman of 62 complained of fullness and burning after meals; in June, 1926, she was found to have achlorhydria with excess of mucus. Two years later a dull continuous pain and anorexia developed, and she became progressively more pale; in February, 1929, achlorhydria was again present, but an inoperable carcinoma of the pyloric end of the stomach was found on exploration.

Porges[7] states that he has seen cases in which achlorhydria was found to be present many years before the appearance of symptoms of carcinoma.

In a large proportion of cases of carcinoma of the stomach, which show unmistakable pathological evidence of being secondary to a chronic ulcer, free hydrochloric acid is found. This fact was noted as long ago as 1890 by Hauser[8] and 1903 by Riegel.[9] Free acid was present in my three cases referred to above, and in the only one of Stewart's ulcer-cancer cases, in which a fractional test-meal was given, a high normal curve of acidity was obtained.[10] In 12 out of 14 operative cases of definite ulcer-cancer described by Orator[11] free hydrochloric acid was found with an Ewald test-meal; it is not unlikely that a fractional test-meal would have revealed the presence of free acid in one or more fractions in the two remaining cases. On the other hand, achlorhydria was found in 7 out of 8 cases, in which the carcinoma appeared to be "primary."

Using a fractional test-meal free hydrochloric acid was found in all but one of 11 Guy's Hospital and New Lodge Clinic cases of carcinoma of the stomach with more than 18 months' history, whereas 17 out of 19 with a history of less than six months had achlorhydria.

TABLE I.—*Length of History (24 N.L.C. and 14 Guy's).*

No. of cases.	Free HCl in fractional test-meal.	Less than 6 months.	6–18 months.	18 months and over.	Average (excluding*).
14	Present.	2 (5/12; 6/12)	2 (10/12; 12/12)	10 (1½, 1½, 1½, 2½, 3½, 4, 4, 12, 12, 30 years*)	3 years.
24	Absent.	17	6	1 (20 years*)	9 months.

Most of the former were presumably cases of ulcer-cancer and of the latter "primary" cancer. In 1911 Panton and Tidy[12] had obtained similar results with the less accurate Ewald test-meal; they found that 20 out of 25 cases with a history of nine months or less had achlorhydria, whereas 4 out of 5 with a history of more than two years had free acid present. Stewart[10] found tha tthe average duration of symptoms in 11 cases of definite ulcer-cancer was 6½ years or only a year less than the average duration of symptoms in a contemporary series of 146 cases of simple gastric ulcer, whereas in 48 cases of "primary" cancer it was one year, and in 10 out of Orator's[11] 16 cases of ulcer-cancer symptoms had been present for periods varying between 1 and 28 years, whereas in 5 out of 7 cases of "primary" cancer there was less than a year's history. It seems clear therefore that when free acid is present the carcinoma is likely to be secondary to ulcer, and when achlorhydria is present it is generally secondary to gastritis. Thus achlorhydria is not a sign of advanced carcinoma, in the early stage of which free acid was present, as the duration of symptoms would then tend to be considerably shorter when free acid is present than in cases with achlorhydria, whereas the reverse is actually the case.

It is natural that there should be exceptions to the general rule as to the association of free acid with ulcer-cancer and achlorhydria with gastritis-cancer, and to the relative duration of symptoms in cases with free acid and with achlorhydria. Thus achlorhydria may occur in very chronic cases of ulcer owing to secondary gastritis, and gastritis does not invariably lead to the complete disappearance of free acid from the gastric contents. Moreover, gastric ulcers are occasionally latent for long periods, and chronic gastritis, though generally latent, sometimes gives rise to definite gastric symptoms.

If achlorhydria was a result of the development of carcinoma in a stomach which had previously secreted a normal gastric juice, the prospect of survival after operation would be considerably better in those cases in which free acid was present than in those with achlorhydria. This, however, is not the case, as on analysing the results of operation five years after gastrectomy had been performed for cancer of the stomach, Hartman[3] found that 44 per cent. of 39 patients who had had complete achlorhydria were still alive, compared with only 22 per cent. of 41 with free hydrochloric acid. These figures strongly support the view that achlorhydria precedes the development of carcinoma and is not its cause.

CHRONIC GASTRITIS.

Under normal conditions the food is finely divided, softened, diluted, and brought to the body temperature in the mouth, so that any irritation which it might exert on the gastric mucous membrane as a result of its physical and chemical properties is, to a large extent, prevented. When, however, food is insufficiently prepared, owing to bolting or inadequate teeth and dentures, the stomach is called upon to carry out the neglected functions of the mouth in addition to its normal functions of digesting proteins. In the process of breaking up, softening, diluting, and warming cold or cooling hot food, in order that the insufficient preparation in the mouth should not interfere with intestinal digestion, the mucous membrane of the stomach is irritated and excess of protective mucus is secreted by the superficial cells of the mucous membrane. If long continued this irritation may eventually give rise to catarrhal gastritis, especially if the quantity of gastric juice secreted is less than the average. It is clear, for example, that the effect of strong alcoholic drinks taken apart from meals will be particularly deleterious in an individual with a stomach which habitually secretes a small quantity of gastric juice. Thus constitutional hypochlorhydria and the constitutional achylia gastrica, which occur respectively in about 8 and 4 per cent. of normal individuals (Bennett and Ryle)[13] predispose to chronic gastritis, whereas constitutional hyperchlorhydria tends to prevent its development.

Chronic catarrhal gastritis is characterised by the continuous secretion of mucus in excess of that normally called forth in response to temporary irritation. This tends to form a tenacious layer which adheres to the surface of the mucous membrane, as can often be demonstrated post mortem. Consequently the mouths of the gastric glands are blocked, and the gastric juice, which the still undamaged glands secrete, is unable to reach the lumen of the stomach; at the same time the raised pressure in the ducts must result in the inhibition of further secretion. If any juice still enters the stomach some or all of the free acid combines with the mucus. Knott[15] has shown that the resulting acid-albumin does not activate pepsin and exerts no destructive action on bacteria.

A vicious circle is now set up. Owing to the diminution or complete disappearance of the gastric juice the food is no longer softened and diluted in the stomach, so that any mechanical or chemical irritants

it may contain still further damage the mucous membrane. The churning movements of the stomach break up the food less efficiently, as the connective tissue of meat and the cellulose of vegetables remain unsoftened. At the same time the antiseptic barrier normally offered by the acid of the gastric juice is lost. Streptococci from septic teeth, tonsils, and nasal sinuses flourish in the neutral or slightly alkaline contents of the stomach and invade the intestines, and Knott [16] has shown that the increased alkalinity of the contents of the small intestine, which occurs when little or no free hydrochloric acid enters the duodenum, results in the invasion of the small intestines and stomach with the colon bacillus. The mucous membrane of the stomach is now attacked by organisms, especially streptococci, and a true infective gastritis develops.

In the earlier non-infective stage the chronic catarrh is little more than an exaggeration of the normal secretion of mucus which occurs in response to the application of mechanical and chemical irritants, only the superficial parts of the mucous membrane being involved. The infective gastritis, on the other hand, leads to progressive damage of the secreting tubules; the mucous membrane which is at first thickened finally becomes atrophied, and the cells which produce hydrochloric acid and pepsin are gradually destroyed, so that true achylia results. Complete recovery from the early catarrhal gastritis with a return of normal secretion occurs if the irritation is discontinued and the mucus is washed away, but the atrophy of the secreting tubules which results from the later infective gastritis and the consequent achylia are irrecoverable.

Chronic gastritis may also be a sequel of the acute gastritis caused by food poisoning. I have seen several cases in which the history clearly pointed to such an origin, and in the rare instances in which we have had an opportunity of examining patients within a few weeks of the acute attack we have found that no free hydrochloric acid was present in the stomach, but that there was a great excess of mucus and often more or less blood, which only very slowly disappeared. In the Schorstein Lecture of 1927 Faber[14] described the chronic gastritis which may result from general infections, such as the acute fevers and tuberculosis. I have certainly seen cases in which it appeared to be a sequel of an attack of influenza, in which abdominal discomfort and vomiting were prominent symptoms. I am convinced that so-called gastric influenza represents a definite clinical condition, in which the resulting chronic gastritis and achlorhydria may be the starting-point of a variety of secondary disorders, the connexion of which with influenza has in the past frequently been regarded as imaginary.

Chronic gastritis with complete achlorhydria is often completely latent; probably the majority of cases give rise to no symptoms of any kind. It may, however, be the direct cause of nausea and vague gastric discomfort, though it never gives rise to pain or vomiting, and the gastric symptoms are rarely sufficiently marked for the patient to seek medical advice for their relief. Symptoms are more often due to the secondary effect of achlorhydria on some other organ than to the gastritis itself. Thus it is the most common of all causes of chronic diarrhoea. The achlorhydria which is an essential predisposing cause of the Addison's anæmia-subacute combined degeneration of the spinal cord-Hunterian glossitis syndrome, is, as I have shown elsewhere,[17] almost as often the result of chronic gastritis as of constitutional achylia gastrica. It is also an important factor in the production of all intestinal infections, chronic appendicitis and cholecystitis, and less frequently of rheumatoid arthritis and other general disorders.

Until recently our knowledge of the pathological anatomy of chronic gastritis was very deficient owing to the rapid post mortem changes which take place in the mucous membrane, although Faber's method of injecting formalin into the stomach immediately after death yielded important results. During the last few years a number of German pathologists have made a special study of the whole of the mucous membrane of specimens obtained by very extensive, though generally incomplete, gastrectomy performed for chronic ulcer and carcinoma. They have shown that in all cases of carcinoma gastritis is present. In those cases in which it appears to be "primary," well-marked atrophic gastritis is present throughout the stomach, whether the growth is small or widespread. Thus Orator[10] found diffuse, generally atrophic, gastritis involving the fundus as well as the pyloric region in 19 out of 20 such cases; in the remaining case, one of pyloric cancer, there was a very long history of alcoholic gastritis, but most of the mucous membrane of the fundus, though slightly inflamed, was not atrophic. On the other hand, although there was well-marked gastritis in the pyloric region in each of his eight cases of definite ulcer-cancer, in five the mucous membrane of the fundus was perfectly healthy, in two it showed slight gastritis, and in only one was severe gastritis present. Konjetzny,[18] Faber,[14] and others have shown that more or less localised gastritis is present in all or almost all cases of chronic ulcer, which explains its association with ulcer-cancer. This makes the presence of universal atrophic gastritis in cases of so-called "primary" carcinoma all the more significant. It seems clear in fact from the clinical and pathological evidence that the carcinoma is no more primary than in the ulcer-cancer cases, but is secondary to the gastritis, so that this form of cancer of the stomach should be called gastritis-cancer in contrast with ulcer-cancer which is due to malignant degeneration of a simple ulcer.

Chronic Gastric Ulcer.

The difficult question of the development of carcinoma from simple ulcer of the stomach has been very thoroughly investigated by Stewart,[19] and I cannot do better than quote his conclusions in his own words.

"In my series of 259 specially studied operation specimens there were 11 which, in my opinion, fulfilled all the criteria, both anatomical and clinical, of ulcer-cancer. The results are shown in Table II.

Table II.—*Frequency of Ulcer-cancer (Stewart).*

70 cancers—11 arising in ulcer	15·7 per cent
180 chronic ulcers—11 with cancer in the margins	6·1 „

"These figures for the incidence of ulcer-cancer are rather lower than those previously published from Leeds[19]—viz., 17·5 and 9·4 per cent. respectively. This is due to the exclusion from the ulcer-cancer group of certain cases, previously included, in which a large part of the floor of the ulcer was cancerous, and in which, incidentally, the clinical history was 18 months or less. In the present series three of the cases had histories extending over 2½, 3, and 4 years respectively; all the others had had symptoms for five years or longer. Now it is undoubtedly true that a certain number of cases of chronic ulcer coming to operation give a comparatively short clinical history, while extensive cancerous infiltration of the crater floor does not, of itself, necessarily exclude ulcer-cancer. I am inclined to think, therefore, that if anything these latest figures err on the side of being too conservative; at the least, they must be taken as the absolute minima so far as the present series of cases is concerned."

Further analysis of his figures show a remarkable difference in the liability to malignant degeneration when the common lesser curvature ulcers are compared with the rare prepyloric ulcers. Thus although only 3 out of 50 of the common carcinomata of the pyloric region were secondary to ulcer, compared with 8 out of 12 of the comparatively rare lesser curvature carcinomata, no less than 3 out of 9 ulcers in the pyloric region showed malignant changes, compared with only 8 out of 172 in the lesser curvature region. In a similar series of 334 resections for ulcer Orator found 11 out of 34 in the pyloric region showed malignant changes compared with 6 out of 300 in the lesser curvature region.

Adenoma of the Stomach.

Polypous adenomata were present in 47 out of 11,000 autopsies performed by Stewart[20]; in 27 they were single, in 7 there were two, in 1 three, and in 2 four; in 10 they were numerous. Six of the 27 cases (22 per cent.) with a single polypus and 7 of the 20 with multiple polypi (35 per cent.) were associated with carcinoma. As there were 263 cases of carcinoma of the stomach in the same series, about 5 per cent. of the latter were probably secondary to simple adenomata. This condition seems to be distinct from the very rare polyposis of the stomach, in which hypertrophic gastritis has led to the development of innumerable polypoid masses scattered over the greater part of the stomach. The mucous membrane in this condition, as Menetrier[21] was the first to find out, is also very liable to undergo malignant degeneration.

Localisation of Carcinoma of the Stomach.

Although the type of gastritis which predisposes to cancer appears to affect the whole or the greater part of the stomach more or less uniformly, and although a very large majority of chronic ulcers are situated on the lesser curvature of the stomach and in the duodenal bulb, cancer is much more common in the pyloric region than anywhere else in the stomach and it never involves the duodenal bulb. It is clear, therefore, that there must be some other factor predisposing to the development of cancer when the pyloric region is affected by chronic gastritis or by chronic ulceration, which is present to a much less marked degree in the rest of the stomach and is completely absent from the duodenum. This factor is probably friction. When the normal gastric movements are watched with the X rays, it is clear that the mucous membrane of the fundus of the stomach and of the duodenal bulb is never subjected to friction. There is very little friction in the body of the stomach, but it steadily increases in intensity as the pylorus is approached, owing to the increasing depth of the waves of peristalsis, which begin at the junction of the upper and middle thirds of the stomach and only give rise to definite churning movements in the pyloric vestibule. No churning occurs either in the fundus of the stomach or in the duodenal bulb.

Addison's Anæmia and Subacute Combined Degeneration of the Cord.

I have seen three cases of typical Addison's anæmia, one of which was accompanied by subacute combined degeneration of the spinal cord, associated with cancer of the stomach, and several similar cases have been recorded. In commenting on the first of my cases, which was reported by Waterfield[22] in 1923, I suggested that the nervous symptoms and anæmia were a result of the achlorhydria, to which the carcinoma had given rise, although weakness and paræsthesia of the feet were present before any gastric symptoms had developed. Porges[7] mentions a case in which a small, non-ulcerated, carcinoma of the stomach, no larger than a pea, which had given rise to no symptoms, was found at the autopsy of a patient who had died of Addison's anæmia. I now realise that the carcinoma was probably secondary to chronic gastritis, and that the subacute combined degeneration of the spinal cord and anæmia resulted from the achlorhydria which was present before the carcinoma developed. As achlorhydria is an essential predisposing factor in the production of Addison's anæmia and subacute combined degeneration of the cord, it is natural that the latter should be occasionally associated with carcinoma of the stomach, whether the gastritis which precedes its development is the cause of the achlorhydria or is simply secondary to constitutional achylia. It is interesting to note that no case has ever been recorded of the association of Addison's anæmia with a simple ulcer of the stomach or duodenum, as these conditions require the presence of free hydrochloric acid for their development.

Origins of Cancer: A Summary.

It is now possible to summarise my conclusions as to the origin of an average hundred cases of carcinoma of the stomach.

1. (*a*) In about 75 per cent. of cases the carcinoma is secondary to chronic atrophic gastritis; these comprise a large majority of those with a short history, almost all of those with achlorhydria, and most of those with hypochlorhydria. (*b*) In about ½ per cent. of cases the carcinoma is secondary to polyposis of the stomach, which is probably a result of hypertrophic gastritis. The history is generally long and achlorhydria is probably always present.

2. In about 20 per cent. of cases the carcinoma is secondary to chronic gastric ulcer; these comprise a large majority of those with a long history, all of those with hyperchlorhydria and a high normal curve of acidity, and almost all of those with the average normal acidity.

3. In about 4½ per cent. of cases the carcinoma is secondary to a simple adenoma of the stomach. The history is likely to be short, and there is nothing characteristic about the test-meal.

Prophylaxis.

The ideal form of prophylaxis would be not merely to recognise and treat the common precancerous gastric conditions, chronic gastritis and chronic gastric ulcer, but to prevent their development. The chief exciting causes of the two conditions are identical; the presence of one or other of the predisposing constitutional conditions determines whether either of them should develop. Prophylaxis of this kind is of the simplest nature; prevention of oral sepsis by adequate dental hygiene and frequent and efficient dental treatment; removal of septic tonsils in childhood and the early recognition and treatment of sinusitis complicating such infections as influenza; regular hours for meals and thorough mastication; avoidance of the excess of "roughage" advocated by most up-to-date food faddists; strict moderation in smoking and in the consumption of alcohol.

Theoretically it should be possible to recognise and cure the conditions which predispose to carcinoma of the stomach.

1. *Chronic Gastritis.*

(*a*) *Diagnosis.*—Although chronic gastritis rarely gives rise to gastric symptoms which are sufficiently serious to call for investigation, the associated achlorhydria is often the cause of various other conditions which lead the patient to seek for medical advice. Owing to its frequent association with chronic diarrhœa, chronic cholecystitis and gall-stones, chronic appendicitis, the Addison's anæmia-subacute combined degeneration of the spinal cord, Hunterian glossitis syndrome, and rheumatoid arthritis it is often discovered incidentally when patients suffering from these conditions are investigated with proper thoroughness. It should be remembered that no patient suffering from any one of these conditions can be regarded as "cured" if the end-result is alone treated; a patient with chronic appendicitis or gall-stones, for example, is almost certain to have further trouble sooner or later if his appendix or gall-bladder is removed and the associated achlorhydric gastritis is ignored.

A test-meal should also be given to patients who have had an attack of serious food poisoning or "gastric influenza" associated with abdominal pain and vomiting. By this means it is possible to recognise that form of chronic gastritis which is a sequel of acute gastritis, and which may, if left untreated, give rise to serious trouble later, possibly only after an interval of many years.

When those cases of chronic gastritis which come to be examined on account of gastric symptoms

or the presence of secondary conditions and those which are a sequel of acute gastritis are excluded, there must remain a considerable number which are completely latent in their onset and in their course. It is not uncommon nowadays for educated people to ask for a complete physical overhaul from time to time, even when they are feeling quite well. Such a proceeding is very wisely encouraged by certain insurance companies in America. If such an overhaul included a test-meal, the presence of chronic gastritis would be recognised, and steps could be taken to treat it and thus prevent the possibility of the subsequent development of the various conditions, including carcinoma of the stomach, to which achlorhydria gastritis predisposes. The development of the type of atrophic chronic gastritis which may undergo malignant degeneration is a very slow process, so that if an overhaul given at the age of 40 includes a test-meal, which gives a normal or high curve of acidity and shows no excess of mucus, the test-meal need not be repeated for at least five years. After that it would probably be wise to repeat it every five years up to the age of 65.

(*b*) *Prognosis.*—In every case of achlorhydria a second test-meal should be given immediately after thorough lavage of the stomach. We have now done this for six years, and have found that in about 50 per cent. of cases free hydrochloric acid appears in the second test-meal. In these cases the prognosis is comparatively good, as the condition is still largely catarrhal; when a normal or high curve of acidity is obtained it can be concluded that little or no atrophic changes have so far taken place in the gastric mucous membrane. On the other hand, when no trace of acid is present in the second test-meal, the patient has either constitutional achylia gastrica, which may or may not be associated with secondary gastritis, or he has a comparatively advanced stage of primary atrophic gastritis. Though the inflammation may be overcome by treatment, nothing can prevent the possibility of the abnormal mucous membrane subsequently undergoing malignant degeneration.

(*c*) *Treatment.*—A diet should be given which contains no mechanically irritating constituents, such as the pips and skins of fruit, coarse vegetables, salads, and tough meat, and no chemical irritants such as alcohol and a large proportion of drugs in common use, except in an extremely dilute form. The food should be very thoroughly masticated, and proper dentures supplied when required. Pyorrhœa alveolaris and infected tonsils and nasal sinuses should be very thoroughly treated, and the dentist should be visited at least every six months.

The stomach should be washed out each morning before breakfast with dilute hydrogen peroxide (one drachm to the pint), the lavage being continued until no further mucus comes away; the final washing should be with plain water. The nascent oxygen set free when the hydrogen peroxide comes into contact with the mucus dislodges it much more efficiently than any other fluid, and at the same time it acts as an antiseptic. The treatment, which the patient soon learns to give himself, is continued daily with gradually increasing strength of hydrogen peroxide until no more mucus is present. It should then be continued on alternate days, then twice a week, and finally once a week for some months. Another course of treatment should be given if there should be a recurrence of symptoms, and in any case a test-meal should be given once a year, so that if the gastritis returns it can be treated without delay.

At one time I advised the administration of large doses (℥l to 2) of dilute hydrochloric acid with pepsin, suitably diluted, before breakfast, and as a beverage with lunch and dinner, in all cases of achlorhydria. It is clear, however, that it is far better to restore the normal secretion of acid by treating the gastritis whenever this is possible. I therefore only give acid in those cases in which there is still no acid or insufficient acid after the second test-meal; a third test-meal should be given at the end of the first course of lavage, as the acid may have then returned even if none was present in the second test-meal, or extreme hypochlorhydria may have given place to a normal curve of acidity. Only when hypochlorhydria or achylia is found at the third test should hydrochloric acid be given continuously. It is not only useful for digesting meat and softening and diluting the food, but its antiseptic action helps to overcome the gastric infection and to prevent reinfection from the mouth or bowel.

Polyposis of the stomach.—This condition gives rise to symptoms suggestive of malignant disease. But the history is likely to be a long one without any recent aggravation, and there is generally little or no pain. In the only uncomplicated case of the kind I have seen weakness from the long-continued severe anæmia caused by the constant oozing of blood had been present on and off for nine years, together with nausea and occasionally attacks of diarrhœa and sickness.

The condition is sometimes indistinguishable from cancer with the X rays, but it may give such a characteristic picture that occasionally a correct preoperative diagnosis has been made. Achlorhydria is generally present, and one or more fractions contain blood, which is therefore always present in the stools.

The only safe treatment is partial or complete gastrectomy, as malignant degeneration may occur at any time, and it may be impossible to tell clinically or on abdominal exploration whether this has already begun. In my case, which I recorded with Adrian Stokes,[23] almost complete gastrectomy was successfully performed by Mr. Lancelot Bromley.

2. *Chronic Gastric Ulcer.*

(*a*) *Diagnosis.*—Though often latent in its early stages, a chronic gastric ulcer sooner or later almost always gives rise to symptoms, which, though less characteristic than those of duodenal ulcer, are sufficiently well marked and persistent to call for further investigation. It is possible to recognise the presence of every chronic ulcer of the stomach with the X rays, but it is always desirable to obtain further information by means of a test-meal and by examining the stools for occult blood before carrying out treatment.

(*b*) *Prognosis* and (*c*) *treatment.*—A gastric ulcer can be regarded as successfully treated when it has been replaced by a sound scar. This not only results in the disappearance of symptoms, but there is very little danger of malignant degeneration of a scar. In Stewart's[9] series of 259 specially studied operation specimens there was only one example of cicatrix-cancer compared with 11 of ulcer-cancer. I am convinced that all chronic ulcers of the stomach, however large and however deeply they may involve the pancreas, are capable of healing under prolonged medical treatment so long as they have given rise to no mechanical obstruction. When, however, an hour-glass stomach has developed or a prepyloric ulcer has caused pyloric obstruction, an operation should be performed. In my experience a gastro-gastrostomy, which is a far easier operation than excision, is all that is required for an hour-glass stomach; the ulcer always heals, and, moreover, it is a remarkable fact that ulcers causing hour-glass constriction rarely, if ever, become malignant. Theoretically the rare prepyloric ulcers, like the much more common duodenal ulcers which cause obstruction, would seem to call for gastro-jejunostomy, which always results in rapid healing; but as no less than 3 out of Stewart's 9 and 11 out of Orator's 34 prepyloric ulcers removed at operation showed clear signs of malignant degeneration, partial gastrectomy should be performed in all cases, as it may be quite impossible to recognise early malignant changes by simple inspection, and the X rays give far less definite information than in the case of lesser curvature ulcers. I can, however, see no reason for advising surgical treatment of a gastric ulcer producing no obstruction. Those cases in which

medical treatment requires to be prolonged to three or four months are just those in which radical surgical treatment is difficult or impossible. Though gastro-jejunostomy may ameliorate the symptoms, the ulcer often does not heal, and so the possibility of malignant degeneration is not prevented. Jejunostomy does nothing which medical treatment cannot do more efficiently, and I have had two cases in which an irremovable ulcer near the cardia only healed on allowing the jejunostomy to close and instituting the usual medical treatment. As local excision was followed by recurrences within a year in 43 per cent. of 78 cases in the combined statistics of Dobson,[24] Sherren,[25] and Collinson,[26] recurrence would probably occur sooner or later in quite 75 per cent. of cases. Quite apart from the fact that partial gastrectomy, the only really radical operation for gastric ulcer, is only possible in those cases in which medical treatment is most likely to be effective, the mortality in the hands of the average hospital surgeon is probably at least twice as great as the risk of malignant degeneration, which was present in 4·6 per cent. of Stewart's 172 cases and 2 per cent. of Orator's 300 cases of lesser curvature ulcers. It is clearly wiser to undergo adequate medical treatment, if necessary prolonged for as much as three months, and survive, than run the risk, small as it may be, of death from operation. Whether the treatment is medical or surgical, it is, of course, essential to remove all foci of infection and to give the patient written instructions as to the régime he must follow in order to prevent a recurrence.

3. *Adenoma of the Stomach.*

Simple adenomata of the stomach, whether single or multiple, rarely give rise to any symptoms. If recognised, they should be excised on account of the great danger of malignant degeneration.

If the conclusions I have drawn in this lecture prove to be correct, the last word will be with the general practitioner and the physician, whose duty it will be to teach prophylaxis and to recognise the first signs of the precancerous conditions of the stomach. We may then confidently look forward to a time when the disorders, so ably described by Sherren and by Walton at this hospital as the "surgical dyspepsias," will cease to be surgical, for while some will be prevented, the remainder will be diagnosed at a stage in which they are still curable by non-operative treatment.

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ON THE SYMPTOMATOLOGY OF INTESTINAL AMŒBIASIS.

BASED ON A STUDY OF 150 CASES.

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THE more extensive his experience of intestinal amœbiasis, the more the practitioner is bound to be impressed by the great variety of the symptoms which infection with *Entamœba histolytica* may provoke. No very great difficulty is to be apprehended in diagnosing the classical type of intestinal amœbiasis in patients complaining of a definite abdominal syndrome and the passage of blood and mucus in the stools; but it is by the less dramatic forms, or by those which present symptoms which might well bear a different interpretation, that one is liable to be led astray. During recent years we have been greatly struck by the diverse character of the amœbic syndrome, and did we not make it an invariable practice to examine the fæces microscopically in every case from the tropics presenting abdominal symptoms, we feel morally certain that, in quite a considerable proportion of cases, the correct diagnosis would have been missed. There are certain bizarre types in which constipation and flatulence constitute the outstanding features; others in which there is chronic diarrhœa; others again in which the symptoms appear to point to the gall-bladder, stomach, duodenum, and appendix as the seat of the trouble.

A study of the recent literature of intestinal amœbiasis reveals the fact that other observers, especially in America, have drawn attention to similar phenomena. James and Deeks,[1] in 1924, and more recently James[2] alone, have found that latent *histolytica* infections far exceed in number those associated with purely dysenteric symptoms at the time of examination. The latter is convinced that in Central and Northern South America *histolytica* infections cause a very large proportion of obscure gastro-intestinal troubles. Craig[3] also believes that the classical picture of amœbic dysentery is noted only in a minority of cases infected with *E. histolytica*. Musser,[4] in 1925, published an excellent account of the subject viewed from the clinical aspect. He remarks that out of 72 cases definitely diagnosed as amœbic dysentery, no less than 40 complained of chronic diarrhœa; 1 was admitted on account of asthma, 2 on account of rectal pain, and 13 on account of varying degrees of pain in the abdomen. Montier,[5] in 1922, described the more obscure forms of amœbic colitis. Some patients, he has noted, may even be constipated, whilst the misleading forms are those cases of intestinal amœbiasis in which the main symptoms are located to the right hypochondrium or to the hepatic flexure of the colon where the diagnosis has to be made from hepatic and biliary disease.

It is with the idea of emphasising the importance of these aberrant forms that we have analysed the symptoms of 150 consecutive cases of amœbic dysentery as they have occurred in practice during the last nine years. With a few exceptions, all these cases have acquired their infections in the tropics and have returned to England for treatment. In every case cited in this paper the diagnosis has been rendered absolute by the discovery of the active forms or cysts of *E. histolytica* in the fæces; these diagnoses have been reinforced in the majority of instances by sigmoidoscopic examination. The main features of this inquiry may be summarised in the accompanying table.

Analysis of 150 Cases of Amœbic Dysentery, Symptomatology, &c.

Distribution of Pain.

(Male cases, 133. Female, 17.)

Abdominal pain or discomfort—	
Present in	126
Absent in	24

	Cases.
Generalised abdominal pain	70
Epigastric discomfort	19
Liver area	9
Gall-bladder area (right costal margin)	2
Right shoulder (referred pain)	2
Gastric localised	3
Duodenal localised	1
Transverse colon	1
Cæcal and appendicular	7
Sigmoidal and descending colon	10
Lumbar localised	2

Maxima and Minima.

	Years.
Age at onset—	
Maximum	64
Minimum	10 10/12
Maximum duration	30
Maximum period without active symptoms	6

Bowel Symptoms.

	Cases.
Diarrhœa	114
Alternating diarrhœa and constipation	8
Constipation	11
Normal regularity of motions	17
Flatulence	37

Bowel Symptoms (cont.).

	Cases.
Tenesmus	34
Blood and mucus in stools	71
Mucus only in stools	18

General Symptoms.

	Cases.
Pyrexia	13
Hepatitis	9
Emaciation	43

Previous Diagnoses.

	Cases.
Neoplasm of pancreas—laparotomy	1
Cholecystitis and cholelithiasis	3
Appendicitis and appendicectomy	4
Duodenal ulcer	1
Tuberculosis	1
Bacillary dysentery	1
Septicæmia (pyrexial case)	1

Intercurrent Diseases.

	Cases.
Kala-azar	1
Hepatic abscess	5
Tuberculous mesenteric glands	1
Pulmonary tuberculosis	1
Malaria and ankylostomiasis	1
Malaria and ascariasis	1
Cystitis	1
Pregnancy	1
Pneumonia	1
Malaria	2
Sprue	2
Gonococcal epididymitis	1

Sex and Age Incidence.

A number of points present themselves for discussion. The overwhelming preponderance of the male is easily explicable by the greater exposure of men to liability of infection, and the relative smaller number of women proceeding to the tropics.

As regards age incidence, intestinal amœbiasis, in the European, at any rate, is a disease of adult life. Personally we have never seen amœbic dysentery in young children. What is generally taught, and we maintain to be true, is that dysentery in children is almost invariably bacillary in origin, and that amœbic dysentery is rarely, if ever, contracted before the tenth year. As will be seen by the table, the minimum age at onset in this extensive series is 10 years 10 months.

In this case the patient was the son of a missionary, who was working in the Shantung Peninsula, China. He had been born in China, and returned to England in March, 1927. Whilst in China he had one attack resembling dysentery. The real attack of classical amœbic dysentery commenced soon after his return to England in March and December, 1927. He was seen in the third relapse in February, 1928. The boy was passing typical blood and mucus stools, of which he had three to four daily. His general health was not much undermined, and there had been no appreciable loss of weight. The fæces contained numerous active *E. histolytica*. An apparently permanent cure took place after anti-amœbic treatment.

The oldest case in this series was a retired official, aged 64, who had returned from Burmah in 1922. Two years after his retirement he commenced to suffer from intermittent attacks of diarrhœa without obvious dysenteric signs. The fæces were found to contain *E. histolytica* cysts.

Latency.

Duration of Infection.—That intestinal amœbiasis may be one of the most persistent of all protozoal infections is well known. In four cases in this series the infection with production of symptoms had persisted for over 20; in one instance it had lasted 30 years.

This patient, a retired planter from Ceylon, had first contracted dysentery in 1897, and had suffered intermittently from colitis ever since. When seen in May, 1927, he was passing diarrhœic fæces containing *E. histolytica* cysts, which were successfully cultivated on Boeck and Drbohlav's medium.

A second case was seen in a printer in 1928. In this case the infection had lasted 29 years, and had been contracted on military service in India. This man had been residing in England for 28 years. In a third, seen in 1929, the infection had been contracted during the South African war in 1901, and he had continued to suffer from dysenteric attacks almost periodically since. Some ten years ago appendicostomy had been performed, and the colon periodically washed out. Although this afforded relief, it had not by any means cured the condition as *E. histolytica* cysts were found in the fæces.

That the symptoms of dysentery may vanish temporarily, even for long periods, with apparent restoration to health, has long been recognised; a year or more may elapse after the cessation of treatment before signs of the disease make themselves evident. Symptoms of dysentery may also become apparent long after the return from the source of infection. There may be a latent period of six years, as in the following case:—

A hairdresser was seen in 1929. He gave a history of frequent attacks in India, where he was born and had spent his youth. Returning to this country in 1922 he had good health for six years, and it was not till the end of 1928 that blood and mucus again appeared in the fæces. On his admission to St. Mark's Hospital the amœbæ were easily recognised in scrapings made from intestinal ulceration by sigmoidoscopy, and the case was kindly referred to us at the Hospital for Tropical Diseases, where the diagnosis was confirmed.

A second case was seen in 1923 in a soldier who served in France in 1916, where he evidently contracted the infection. Fresh symptoms of amœbic dysentery first became apparent in 1922, when the nature of the disease was proved at sigmoidoscopy and active *E. histolytica* were found in scrapings made from the bowel.

Latent periods of two or three years are comparatively common. It is the honest appreciation of this peculiarity of intestinal amœbiasis which renders it so very difficult to assess the permanent value of any particular form of treatment. It seems that the clinician has to wait six years or more to finally ascertain whether the cure has in effect been successful.

The recurrence or relapse may be acute; the onset sudden with violent diarrhœa and loss of weight. In one instance the quiescent period appeared to be as long as nine years.

This was in a sea captain who was seen in June, 1928, in an acute attack of amœbic dysentery. Cysts of *E. histolytica* were found in the fæces, and on sigmoidoscopy the typical ulceration was seen. The history clearly indicated that dysentery commenced in 1910, and that the last definite recurrence had been in 1919, when the organisms were discovered in the fæces in Liverpool.

Symptoms.

Localisation of Pain.—The absence of any distressing abdominal pain and general innocuity of the symptoms and their compatability with fair health are an outstanding feature. No very evident signs were elicited in 24 cases. In other words, amœbic dysenteric infection may be compatible with average good health.

In intestinal amœbiasis subjective pain is, as a rule, localised to certain definite areas of the large bowel; it may be, as it usually is, confined to the sigmoid and descending colon (ten cases), or to the opposite side of the abdomen, to the cæcum and appendicular area. In seven cases of this series the pain experienced by the patient and elicited by pressure was confined to the cæcum, the outlines of which can occasionally be ascertained on deep palpation. This localisation of pain is often mistaken for appendicitis, and not unnaturally the appendix may be at first suspected and removed. While not denying the frequency of true appendicitis in tropical countries, the coexistence of amœbic dysentery with pain localised to the cæcum is frequently mistaken for it. So far we are not convinced that we have encountered a case of appendicitis primarily due to amœbic infection.

Pain may be localised to the centre of the transverse colon, and an area of deep tenderness may be elicited

in the epigastric triangle. The localisation of amœbic ulceration to this part is rare without the implication of other tracts of the large bowel; but when it does occur it may be most misleading. This accounted for six cases in our series: two in which the pain was registered at the outer border of the right rectus muscle and had been mistaken for gall-bladder tenderness, three in which the pain appeared in the stomach itself, and one in whom it was definitely located to the transverse colon. Then there is a small group in which the abdominal pain is referred to the lumbar region, in which case suspicion of renal trouble was quite justifiably entertained.

Emaciation is the rule in acute amœbic dysentery. In 43 cases of this series the usual loss of weight is from 14–28 lb. in a year, the greatest loss recorded being one of 42 lb. in three months. On the other hand, chronic intestinal amœbiasis so little interferes with nutrition that actual increase of body-weight, even to the extent of obesity, may be recorded. We have records of three cases in which a considerable increase of body-weight occurred. In one the duration of the disease with acute symptoms was of ten years, with an increase of 28 lb.; another in a soldier, of four years' duration, with a similar increase; a third in a lady, of three years' duration, who had in the meantime become extremely stout, but no actual figures of weights were obtainable.

Bowel Symptoms.—Obvious and chronic diarrhœa, without the appearance of blood and mucus in the stools, was the outstanding feature in no less than 114 cases. This significant fact gives support to Dobell's contention that the term "amœbic diarrhœa" must, in the majority of instances, supplant the term "amœbic dysentery." We believe that chronic "amœbic diarrhœa" is a much more common complaint than "amœbic dysentery," and that in a great many instances these amœbic diarrhœas are painless and are not accompanied by any very evident involvement of the bowel wall. Usually periods of diarrhœa alternate with those of constipation (eight cases). On the other hand, the anomalous fact asserts itself that constipation may constitute the outstanding feature of the case. We have records of 11 such. Illustrative cases are as follows:—

A young man of 28 years contracted an intermittent form of diarrhœa whilst on military service in India from 1919–22. For five years after his return to England from India he had suffered from chronic constipation, flatulence, mental and physical exhaustion, with loss of weight of 14 lb. Tuberculosis of the abdomen had been suspected. The bowels were never open, save by strong aperients. The cysts of *E. histolytica* were found, and were cultured from the stools. Loss of flatulence and increased regularity of the bowels followed a rigorous course of anti-amœbic treatment.

Another good example occurred in a locomotive driver in the Nigerian service, who complained of chronic pain in the left side of the abdomen, and the most obstinate constipation as a sequel of an acute attack of amœbic dysentery. The fæces contained *E. histolytica* cysts. The regularity of the bowels was greatly improved by anti-amœbic treatment.

Flatulence may be a most distressing symptom. Usually it is confined to the ascending colon and the cæcum. It may be obvious to the examining eye. Flatulent distension of the cæcum with retained gas, and which occasions a splash on palpation (well termed the "amœbic splash"), is so frequent as to be almost diagnostic. Flatulence is tabulated as a feature in 37 cases in this series. It may be so obvious and persistent that chronic pancreatitis or chronic intestinal obstruction may be suspected. A typical example is as follows:—

A lady was seen in 1928 whose chief complaint was loss of weight, chronic constipation, and flatulence. She had lost her complexion, the skin was harsh and dry. She presented, in fact, the clinical picture of intestinal toxæmia. The flatulence was confined for the most part to the right iliac fossa in the vicinity of the cæcum. Both sigmoid and cæcum could be easily palpated. The fæces contained *E. histolytica* cysts. Both constipation and flatulence were entirely cured by anti-amœbic treatment.

Dyspepsia.—Acute dyspeptic symptoms are often associated with flatulence. Rarely cases are encountered in which the tenderness and acuteness of pain are referred to the pit of the stomach. These are usually long-standing infections with considerable infiltration of the bowel wall.

One typical example was seen in January, 1927. The pain was referred to the right hypochondrium, especially when lying on that side. The cæcum was infiltrated and thickened, and easily palpable. The fæces contained *E. histolytica* cysts. The dyspeptic symptoms disappeared after efficient anti-amœbic treatment.

Cases Simulating Duodenal Ulcer.—The possibility of intestinal amœbiasis being mistaken for duodenal ulcer is one that rarely arises, but the one particular case in this series was so remarkable that a few details must be given.

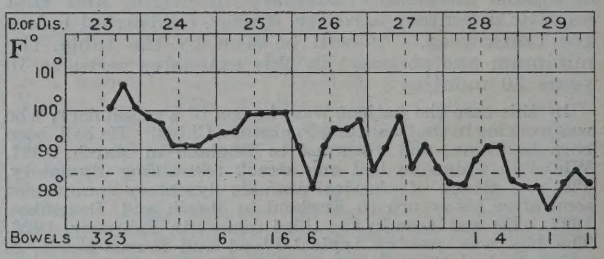
A quartermaster of an Indian liner, aged 45 years, was seen in March, 1927. This man had, three years previously, suffered from liver abscess, for which an operation was performed. After this he appears to have suffered from chronic supra-umbilical pain, flatulence, and dyspepsia. On March 17th, 1927, he was suddenly taken ill with acute abdominal pain, vomited bright blood, and passed a number of black, tarry, melænic stools. Two further bleedings took place within the next ten days, till the condition of the patient became desperate. The anæmia was so profound that blood transfusion had to be resorted to.

On microscopic examination of the melænic fæces one active *E. histolytica* was seen. No improvement followed the usual alkaline and dietetic treatment for duodenal ulcer, but on the other hand emetine injections of gr. 1 for six days effected a most remarkable improvement. This was reinforced later on by a complete course of emetine bismuth iodide and yatren intrarectal injections. A complete cure appeared to have been produced. The improvement to the blood picture, general appearance, and weight of the patient were alike remarkable.

Acute Amœbic Dysentery.—One of us (P. H. M-B.) has recorded[6] a case of acute onset and course with fatal results within 14 days of the onset. Such instances are extremely rare. Amœbic dysentery may, however, produce the most profound cachexia, almost resembling that of malignant disease.

A man of 29 years of age was treated in May, 1928, on his return from Nigeria. The nature of the illness had already been recognised, and he had been treated with a total of grs. 59 of emetine continuously, but the present was the most severe attack he had experienced. He had lost

FIG. 1.



Four-hourly tem erature chart in a case of acute amœbic dysentery, associated with toxic absorption showing the character of the pyrexia.

28 lb. in weight within a month. The diarrhœa averaged 12 blood and mucus stools a day. The patient was obviously cachectic, the sigmoid and cæcum were definitely thickened, while on sigmoidoscopy most extensive and deep ulceration was present. *E. histolytica* were demonstrated in large numbers in scrapings from these ulcers. The response to the combined treatment with emetine-bismuth iodide and yatren was remarkable. He regained 18 lb. within the same number of days. This was one of the worst cases from the clinical aspect we have ever seen.

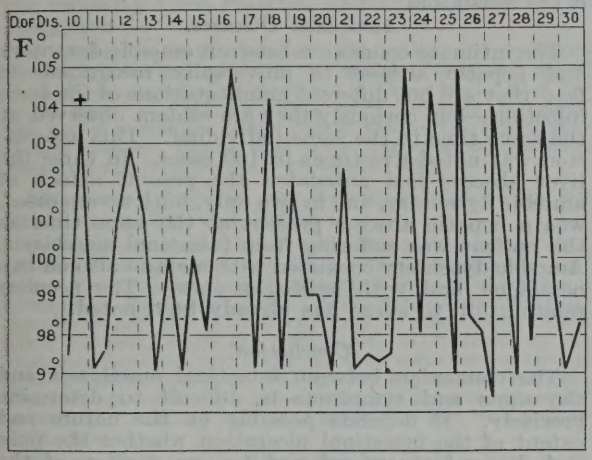
Pyrexia.—The course of a straightforward case of intestinal amœbiasis is usually apyrexial. The absence of anything like a high temperature is usually regarded as a valid point of differentiation between intestinal amœbiasis and bacillary dysentery. It is necessary to point out that this is by no means an invariable rule. In the present series there were no less than 13 cases associated with pyrexia which could not be

accounted for by any other associated infection, or by coincident amœbic hepatitis.

The character of the pyrexia can be gathered from the accompanying temperature chart (Fig. 1); it is probably due to the absorption of septic matter from the bowel wall.

This patient was a ship's engineer, who was admitted to hospital in 1926 with acute amœbic dysentery, passing some 10–20 blood and mucus stools daily. The patient looked ill, with pinched facies and furred tongue. The abdomen was tender, and the cæcum and sigmoid were indurated and palpable. There was no evident enlargement of the liver. The pyrexia rapidly subsided on emetine and emetine-bismuth iodide treatment.

FIG. 2.



Temperature chart in a case of acute amœbic hepatitis with multiple rigors. The cross shows the time at which cysts and pre-cystic forms of *E. histolytica* were found in the fæces.

Pyrexia Resembling Malaria.—The fever may be so acute in onset as to resemble a malarial attack for which it is often mistaken. Of these no less than five cases have been seen where the previous diagnosis founded on the symptoms of the patient indeed had been malaria. We are convinced that these attacks are due to recurrent embolism of the liver by amœbæ derived from the bowel.

A remarkable case of this nature was admitted to hospital in November, 1927. The patient had served for years in India, where he had suffered from dysentery, and had returned in 1923 to England. A latent period of five years elapsed during which he had no symptoms. Then in August, 1927, a series of rigors commenced, resembling closely in the onset and nature that of benign tertian malaria. They were accompanied by the most profuse sweats. Sometimes two rigors occurred within 24 hours. The temperature frequently rose to 105° and 106° F. (Fig. 2). This lasted throughout three months, till the state of the patient became very alarming. The diagnosis was established by the discovery of active *E. histolytica* and its cysts in the fæces, together with the existence of a leucocytosis of 30,000. The amœbæ were subsequently cultured from the fæces. Eventually in December, 1927, on vigorous anti-amœbic treatment the patient made a good recovery. Although the liver was enlarged to percussion, and as ascertained by radiographic examination, there was never any acute pain referred to the organ as is usually the case in amœbic hepatitis.

These malaria-like attacks may persist over many years, and then their nature is usually quite unexpected until the stools are microscopically examined.

A fish salesman was seen in July, 1926, with a history extending back over eight years. Originally infected with amœbic dysentery in Syria, in 1918, he had on one occasion only passed blood and mucus in the stools. Ever since that time he had been subject to attacks of otherwise inexplicable diarrhœa. In June, 1926, he commenced to suffer from bouts of fever, with rigors and faintness and tenderness over the liver at the costal margin. The sigmoid flexure and descending colon were distinctly palpable. *E. histolytica* cysts were present in the fæces. There was a leucocytosis of 15,000. Immediate improvement and cessation of febrile attacks took place on anti-amœbic treatment.

Continuous Pyrexia.—Another striking case occurred in a young woman who had returned from India in 1927 and was seen a year later.

She had been taken ill at Marseilles in December, 1928, with recurrent attacks of four bouts resembling closely those of malaria, associated with abdominal dysenteric symptoms. The temperature frequently rose to 104° or to over 105° F.

On admission to hospital in January, 1929, she was passing dysenteric motions containing active *E. histolytica*. She had two subacute rigors associated with a leucocytosis of 14,000. The pyrexia speedily resolved, and the condition entirely cleared up on anti-amœbic treatment.

Ulceration of the Rectum Without Involvement of the Rest of the Large Bowel.—The amœbic ulceration of the rectum may be solitary, and the ulcer may be of a large size and give rise to considerable local pain. The ulcer from its site, from its general character, and from the nature of the incessant blood-stained discharge, may closely simulate that of malignant disease.

We have the record of one such case in a man of 37 years of age seen in May, 1928. The condition had persisted for two years. On sigmoidoscopy a large ragged ulcer, 2 cm. in diameter, situated in the rectum, 5 cm. from the anal margin, was discovered. In its indurated character and the ragged nature of the margins of the ulcer it did not resemble an amœbic ulcer; nevertheless, active forms of *E. histolytica* were discovered in the scrapings, and it entirely healed up on vigorous anti-amœbic treatment.

Intestinal Hæmorrhage.—It has long been recognised that severe intestinal hæmorrhage may take place from amœbic ulceration of the colon. It may be so sudden and so profuse that the amœbic nature of the case may not be recognised or even suspected. The difficulty of diagnosis is made doubly severe by the fact that the amœbæ themselves are washed away by the amount of blood and cannot easily be identified by microscopic examination.

A patient was seen in January, 1926. He had suffered intermittently from attacks of amœbic dysentery for over one year, and had been found to be a chronic carrier of *B. typhosus*. Subsequent to an attack of typhoid fever in 1916 on the occasion in question the attack had been ushered in by the most profuse dark melæna, consisting almost entirely of altered blood. He had lost about 2 st. in weight. With great difficulty a few typical *E. histolytica* were found in the melæna, and a permanent recovery followed after specific treatment.

Another good case was seen in September of the same year. This was a lady of 55 years of age, who had contracted the infection in Chile early in 1926. The illness had begun suddenly with a rigor and high temperature, with pain in the right shoulder and the right arm. The diagnosis eventually turned out to be that of a hepatic abscess which had ruptured into the right lung, producing the most profuse hæmoptysis. At the same time she passed large black tarry stools in which, on microscopic examination, an active *E. histolytica* was recognised. A complete course followed intensive anti-amœbic treatment.

Painful Spasmodic Contraction of Sigmoid Colon.—Spasmodic contractions of the bowel occur in amœbic dysentery, especially in long-standing cases, and in those in whom constipation is an outstanding feature. This spasmodic contraction may dominate every other symptom of intestinal amœbiasis.

A locomotive driver from Nigeria was seen in February, 1925. He complained of chronic constipation and pain over the descending colon and sigmoid, which, though usually of a dull aching character, was punctuated by acute exacerbation. The spasmodically contracted bowel could be easily palpated. Numerous *E. histolytica* cysts were present in the fæces. Vigorous anti-amœbic treatment entirely cleared up the condition.

Hæmorrhoids.—External piles are a very frequent concomitant of intestinal amœbiasis. Almost every case of long standing shows evidences of external piles. They are probably occasioned by the straining at stool which is a feature of this disease. As a rule, we do not advocate any active interference in these cases, as the piles recede and almost disappear when the underlying cause has been adequately dealt with.

Prolapse of Rectum.—As in the case of hæmorrhoids, so may prolapse of rectum be brought about by constant straining at stool.

We have seen one such case in a medical man, 37 years of age, who was seen in October, 1927. He gave a clear history of amœbic dysentery contracted in Mesopotamia in 1922. He had suffered from a great deal of diarrhœa with a little tenesmus, but the rectal prolapse had become gradually more pronounced. Large numbers of *E. histolytica* were present in the fæces, and a sigmoidoscopic examination revealed large numbers of characteristic ulcers. Without any additional aids, a complete and permanent retraction of the prolapsus recti took place on specific treatment. The patient has remained in good health, and has undertaken a large clinical practice ever since.

Sequelæ.—Stricture of the bowel, not any actual interference with the passage of fæces as the result of amœbic ulceration, has not been observed.

Dilatation of Colon (Megacolon).—Two instances of this condition, apparently the direct result of chronic amœbic infection of the large bowel, have come under notice. In both instances the gradual onset of the condition, coming on two to three years after the cause of amœbic infection, has been observed.

The most striking instance has been watched since 1920. This man contracted amœbic dysentery whilst serving in Mesopotamia in 1917. He had relapses of dysentery in 1919, for which he was treated with six courses of emetine-bismuth iodide, and another more severe one in September, 1920, for which he was treated by a more vigorous course of emetine-bismuth iodide in the Hospital for Tropical Diseases. He appears to have been entirely cured of his amœbic infection. From 1925–27 he was under continuous observation with enormous dilatation of the colon, especially of the transverse portion, resulting in the characteristic Hirschspring's disease. The abdomen itself was greatly distended, especially in the lower quadrant, where the constant meteorism occasioned the most acute discomfort. The condition revealed by barium enema was one of gross distension and sacculation of the whole colon.

The second case in a ship's officer was similar in its main features, and in both an intimate and direct association with chronic intestinal amœbiasis could be traced.

Sprue Secondary to Intestinal Amœbiasis.

We have records of two cases in which sprue-like symptoms supervened upon an amœbic infection.

The first was a young officer who contracted amœbic dysentery in Mesopotamia, whence he returned rather acutely ill with dysenteric symptoms and the passage of active *E. histolytica* in the fæces. During his course of treatment he developed a typical acute hepatitis. All dysenteric symptoms rapidly subsided on vigorous anti-amœbic treatment, but almost immediately developed sprue-like symptoms with stomatitis, aphthous ulceration of the mouth, and the passage of large frothy sprue-like stools. The sprue state lasted for just one month and yielded to dietetic treatment. This was in April and May, 1920, since when he has remained in good health.

In the second case it was difficult to determine whether the amœbic infection antedated the sprue or not, but when the patient, who was 55 years of age, and who hailed from Bangalore, came under treatment in August, 1927, he had lost 76 lb. (5 st. 6 lb.) of his body-weight. In addition to this emaciation there was shrinkage of liver, dullness, anæmia, and the stomatitis of sprue. The fæces were large, pasty, and frothy, but also contained blood and mucus and active *E. histolytica.* Treated with the combination of emetine-bismuth iodide and rectal injections of yatren he made a very good recovery, and on returning to India nine months later he weighed 14 st., or an increase of 104 lb. of body-weight.

We think that there is a very close connexion between amœbic dysentery and sprue. The frequency with which the latter supervenes upon the former is more than a mere coincidence. Here we have records of two cases in which these diseases merged imperceptibly into one another, and it almost suggests that in certain cases sprue supervenes as a sequel of intestinal amœbiasis.

Localities in which Intestinal Amœbiasis was Contracted.

The cases quoted in this series hailed from nearly all over the world. From India, China, Ceylon, East Indies, Aden, Palestine, Mesopotamia, Salonika, Gallipoli, Egypt and the Sudan, East, West, and South Africa, New South Wales, the Mediterranean area, Venezuela, West Indies, Cape Verd, and Canary Islands. There were three records of indigenous amœbic dysentery, contracted in 1917–19 on active service in France, and one in Germany contracted whilst a prisoner of war in 1918. There is also the record of an indigenous infection contracted in London.

The patient, a stevedore, aged 60, was seen in the Albert Dock Hospital in 1928. He has never left this country, but for 40 years had worked upon ships from Calcutta and Bombay, and it is from this source probably that he contracted the infection, presumably from association with lascar sailors. He had been ill for over two years with very evident signs of dysentery, and had been treated for colitis and for possible lead poisoning (lead colitis). Unfortunately he broke his leg in October, 1928, and had to be admitted to hospital for treatment when the true nature of the "colitis" was recognised by the discovery of active *E. histolytica* in the blood and mucus stools. The response to anti-amœbic treatment was as instantaneous as it was remarkable.

Associated Diseases.

The intimate connexion between amœbic dysentery and hepatic abscess is universally recognised—in fact they are but different manifestations of the same infection—but curiously they are seldom observed at the same time in the same individual. This association was noted five times in 150 cases. In three the liver abscess had antedated the present attack of amœbic dysentery, and in two only, both severe cases, was a hepatic abscess present at the same time as the patient was suffering from intestinal amœbiasis. Amœbic dysentery coexisted with malaria also on two occasions and with kala-azar once. The peculiar relationship to sprue has already been noted.

Conclusion.

The connexion between intestinal amœbiasis and the signs and symptoms is difficult to determine precisely. It depends possibly on the nature and extent of the intestinal ulceration whether the pain and discomfort are referred to one portion of the bowel or the other. Why the same infection should produce active diarrhœa in one person, and chronic constipation and flatulency in a second, cannot at present be determined. It probably depends upon the amount of mucous membrane destroyed by the amœbic infection, or the resistance of the patient to this particular infection. The diversity in the nature and severity of the symptoms produced render intestinal amœbiasis one of the most protean of all protozoal infections.

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EAST HULL MATERNITY HOSPITAL AND CLINIC.—A new Municipal Maternity Home and Infants' Hospital has recently been opened at Hull. The institution was founded by private munificence in 1912, but by 1915 the work had so greatly expanded that it was taken over by the corporation. The new premises, which already belonged to the city, have been adapted to provide 49 maternity beds, 16 cots for infants suffering from dietetic diseases, 8 beds for nursing beds, and 10 isolation beds. The hospital is a training school for midwives. In 1928 there was one death among the patients attended by a municipal midwife, and no death among the 645 women confined at the maternity home—one maternal death for 1085 confinements. On the other hand, there were 24 maternal deaths from the 5018 confinements which take place elsewhere in the city, or one death for every 209 confinements. On the same occasion there was opened the East Hull Clinic, which brings together five different departments scattered about the district. It is claimed that the Clinic "is, in many ways, unique," and it is pointed out that, under the special arrangements of the Hull Corporation, all children, whether under or over 5 years of age, can be treated. It is officially described as "an endeavour to provide a complete Public Medical Centre for East Hull."

THE INFECTIVITY OF ERYTHEMA NODOSUM.

By J. O. SYMES, M.D. Lond.,
CONSULTING PHYSICIAN TO THE BRISTOL GENERAL HOSPITAL.

THE majority of cases of erythema nodosum, febrile and non-febrile, occur sporadically, and the closest investigation fails to reveal a possible source of infection. Then one meets two or more cases so closely associated one with the other that it is difficult to disregard the possibility of infection. Two illustrations of this have been brought to my notice recently by medical correspondents. For the following I am indebted to Dr. D. J. Thomas, of Melbourne:—

A woman, aged 21, had a typical attack of erythema nodosum, subsiding quickly. A fortnight later her brother, aged 26, developed a sharp attack. Three weeks later her sister, aged 18, had tonsillitis and erythema nodosum. She had a congenital aortic defect, and her attack of erythema nodosum passed into acute bacterial endocarditis, which proved fatal about three months later.

The second instance was communicated to me by Dr. Victoria Tryon of Clifton:—

Two female domestic servants, neither of whom had suffered from any previous illness, shared a common bedroom. One of them, aged 20, developed the rash of erythema nodosum on March 19th, 1929. There were no constitutional symptoms and the attack was over in nine days. Her fellow servant, aged 22, complained of stiffness in the joints on May 20th, and there was then some teno-synovitis of both patellar tendons. On June 3rd the rash of erythema nodosum appeared. The attack was a slight one, unaccompanied by constitutional symptoms, and she was well in eight days.

It would be easy to multiply such cases, both from one's own experience and from published reports. Even more common is the simultaneous occurrence of erythema nodosum in two or three members of the same family. Whilst the probability is that they have all been infected from a common source, one cannot conclusively refute the explanation that is so often advanced—namely, that the disease has been caused by some food poisoning or some defect of hygiene which has been common to all the sufferers.

In 1920 I saw two sisters, one of whom developed erythema nodosum on March 20th and the other on March 22nd. One of these, a medical student, returned to her work on March 27th, long before the nodes had disappeared, and subsequently a nurse in the ward in which she was working developed erythema nodosum on April 8th, and a night nurse on May 2nd.

Small outbreaks of the disease in schools or institutions are not uncommon. Langford Symes saw 12 cases in a home of 100 young girls between May 14th and June 14th, 1907, and Arvid Wallgren[1] in 1927 reported an outbreak of 18 cases amongst a class of 34 girls. Wallgren believes erythema nodosum to be a form of tuberculosis, but the facts as stated are much more suggestive of an infective fever, for the girls were all between the age of 10 and 12 years; the cases occurred in batches as if one group had infected the next; and they occurred in the months of March, April, and May, when erythema nodosum is most prevalent. Larger outbreaks, attacking whole communities, are not infrequent. Wiborg saw 30 cases between November, 1921, and August, 1922, amongst an isolated community of 816 people at Bangsund. Dr. R. E. Roberts, medical officer of health of the Mynyddislyn Urban District Council, saw 50 cases during a period of five weeks in August and September, 1920.

Incubation Period.

It is very difficult to fix the incubation period of erythema nodosum. The notes of published cases are of little value, for as a rule the appearance of the rash is regarded as the beginning of the illness, regardless of the fact that there has frequently been a febrile period of from 7 to 14 days before the exanthem appeared. It seems, however, that the incubation period may be a very brief one. For instance, a case is reported in which a child who was suffering from erythema nodosum was admitted to a hospital ward, and nine days later two children in the ward developed the disease. There had been no previous cases of erythema nodosum in the institution. Ledoux relates the history of four girls who suffered from the disease. The first was attacked in December, the second followed nine days later, the third 12 days after the second, and the fourth 15 days after the third. My own experience would lead me to give an incubation period of about 14 days. A. A. Lendon estimates it at about 11 days. Whilst it is certain that the incubation may be brief, it is obvious that the interval between two associated cases is usually a long one, extending into weeks and sometimes months. For instance, in the case of the two domestic servants which I have already quoted the interval was nine weeks, and similarly, some years ago, I discharged a boy convalescent from erythema nodosum from the Bristol General Hospital on July 12th, and admitted his sister suffering from the same disease on August 31st. There are two possible explanations of this long interval between cases. The infectivity of erythema nodosum is very low and the ordinary healthy subject is able to withstand it. If, however, the resisting power be temporarily lowered from any cause, then the germ gets the upper hand, and the disease is developed. In this connexion it is noteworthy that erythema nodosum is very frequently preceded by a period of ill-health, or follows after some acute or chronic infection. Its close association with tuberculosis is possibly only an evidence of the debilitating result of this disease. Another possible explanation is that the infective organism survives for a long period, and the convalescent becomes a "carrier." In this way the infection would be comparable to that of diphtheria. In support of this view is the fact that relapses are not uncommon, and sometimes patients reinfect themselves over and over again. Lendon reported the case of a woman who, after a month of prodromal illness, developed the rash of erythema nodosum on Jan. 5th, 1899. Fresh crops of nodes continued to appear until the following August. The patient went to South Africa, and subsequently, in January, 1900, wrote saying she thought that she had seen the end of the illness, as the last traces had disappeared just two weeks before the date of writing.

Characteristics of the Infection.

A striking instance of how infection may persist in erythema nodosum is provided by the case of Mrs. A., whose history I detailed in my recently published monograph on this disease. This lady had her first attack at 18 years of age, and subsequent attacks when 21, 24, 27, 30, 32, and 37. By the courtesy of her medical attendant, Dr. Winifred Nott, I was able to see Mrs. A. in two subsequent attacks (eighth and ninth), one in April and the other in July, 1929. She was then 42 years of age. Although the acute attacks were several years apart, Mrs. A. stated that she was seldom free from nodules for more than a few weeks at a time. Any depressing circumstance or failure in general good health brought back a few spots. Four of the acute attacks occurred during pregnancy. Some authors have described such recurrent attacks or relapses as *chronic erythema nodosum*.

Another interesting feature in the incidence of erythema nodosum is the predilection it shows for certain families. Over and over again one sees two or three members of a family getting attacks of erythema nodosum. The attacks are many years apart, and often occur in widely separated members of the same family, so that one can exclude the possibility of infection by fomites or of one member being a carrier. Woringer calls such instances

[1] See THE LANCET, 1927, ii., 1036.

familial erythema nodosum, and maintains that they share a similar familial constitution which renders them peculiarly liable to this infection. Of such the following is an example:—

Mrs. N. Erythema nodosum in 1886; eldest daughter died during attack of erythema nodosum and endocarditis, 1900; fourth daughter had erythema nodosum in India in 1925, and a mild attack in England, 1927; fifth daughter had an attack in 1920, and second and third attacks in Egypt 1921 and 1922; the sixth daughter had attacks in 1915, 1920, and 1922.

Females are more than three times as prone to develop the disease as are males. There is no other infectious disease which shows this peculiar sex incidence.

The nature of the infective agent in erythema nodosum is at present unknown. On the continent the view is widely held that this disease is a modified form of tuberculosis, but in this country and in America it is increasingly regarded as a streptococcal infection. Rosenow claimed to have isolated a diphtheroid organism which, in some stages, assumed a streptococcal form, and which reproduced the disease in animals, but his work has never been confirmed. Whatever the organism may be, its activity in all European countries is greatest in March and April, and this groups it with such diseases as pneumonia, streptococcus infection, tuberculosis, and encephalitis lethargica, for which the winter months, by the absence of sunlight, prepare the soil. Infection takes place through the tonsils, and it is probable that it is in these organs and in the nasopharynx that it lies dormant for weeks or months.

THE USE OF BISMUTH IN THE TREATMENT OF CONGENITAL SYPHILIS.

By T. M. LING, B.M. Oxf.,

JOHN AND TEMPLE RESEARCH FELLOW IN DISEASES OF CHILDREN, ST. THOMAS'S HOSPITAL.

SINCE its introduction in the treatment of syphilis by Sazerac and Levaditi in 1921,[1] bismuth has been accepted as an antisyphilitic remedy of undoubted value. Laboratory experiments and clinical trial have testified to its efficacy, and many French writers regard it as therapeutically superior to mercury. It is only natural that a drug which has proved of such value in acquired syphilis should be employed in congenital syphilis, a variety of the disease that is admittedly very refractory to treatment.

Among the first to report his experience with bismuth in congenital syphilis was Müller,[2] who treated six cases in 1922, and secured a good symptomatic response without toxic effects. In the following year Cajal and Spierer[3] reported the treatment of eight cases with a bismuth tartrate preparation, and stated that its therapeutic action on active manifestations was more rapid than that of mercury and as rapid as that of the arsenical preparations. Untoward symptoms were not observed. A suspension of bismuth salts in oil was employed by Torok.[4] In his experience bismuth proved to be a more satisfactory drug than either mercury or arsenic, owing to its ease of administration and low toxicity in therapeutic doses. Several other continental writers have expressed similar approval, while dissenting opinions as to its value are offered by Pinard[5] and Frank,[6] the former asserting that bismuth is not well borne by children, and that it often causes anæmia, emaciation, and lassitude; while Frank had one death, apparently consequent upon bismuth therapy. Wright[7] has reported very good results, and was able to render 47 per cent. of his Wassermann-fast cases serologically negative, although prolonged treatment with arsenic and mercury had been previously carried out without effect.

Mode of Administration.

In my investigations "bisoxyl," a suspension in water of bismuth oxychloride and chloretone, has been used throughout, the injections being given deeply into the subcutaneous tissue of the thigh at weekly intervals, the dose varying with the age of the child. As a rule the initial dose was 0·1 g., gradually increased to 0·2 g. if no signs of intolerance developed; this corresponds to 0·01 and 0·02 g. of the bismuth salt itself. The injections are only accompanied by momentary pain, unlike those of intramuscular arsenic, after which some degree of local swelling and tenderness usually persists for two or three days. This fact was constantly commented on and approved of by the mothers, some of whom sanctioned treatment with bismuth, although further arsenical treatment had been refused. On this account it is very much easier to ensure regular attendance with bismuth therapy, a very important point where the duration of treatment may be a matter of years. The site of injection was always well massaged after the administration of the drug, and in no case has any localised fibrosis occurred.

Intolerance to Bismuth.

As a general rule the symptoms of bismuth poisoning are similar to those of mercurial poisoning, except that recovery from the toxic effects is considered to be more rapid in the former. Anwyl-Davies[8] regards loss of appetite, accompanied in some cases by vague feelings of indigestion and headache, as the earliest manifestations of bismuth intolerance. Loss of weight is another early sign; in this series the patients were weighed regularly every fortnight. The weight remained absolutely stationary in four, while one of the children, who developed albuminuria, lost weight quite markedly so that the treatment was stopped. A blue line on the gums may be regarded as a most valuable sign, as it is a guide to the amount of bismuth that can be tolerated, and is thus a good index of the appropriate dosage. At first a grey line forms round the edge of the gums, and this gradually turns to a bluish colour. Even when the line becomes definitely blue, provided that there is no stomatitis, the administration of bismuth need not be stopped, but the dosage should be decreased. Colonel Harrison[9] has pointed out that the blue line along the gum margin is more frequent when the soluble bismuth preparations are used, and that in all cases treatment should be stopped as soon as stomatitis is observed.

Clinical experience of the effect of bismuth on the kidneys bears out the conclusions that Brown, Saleeby, and Schanberg[10] reached experimentally on rabbits—namely, that the toxicity of bismuth is relatively low. It is presumably on account of this discrepancy between the therapeutic and the toxic dose that patients who develop albuminuria do not continue to show it for any length of time after the treatment is ended. This is well shown in Cases 14 and 15. Within six weeks of the cessation of treatment the urine was free from albumin, and there was apparently no impairment of kidney function as judged by renal efficiency tests. It is of interest to note that both these patients had received antisyphilitic treatment for over three years before commencing the bismuth; as they were the only cases to develop albuminuria it is possible that the previous prolonged treatment with arsenic and mercury had to some extent damaged the kidneys and rendered them more susceptible to the subsequent bismuth.

Indications for Bismuth Therapy.

The most refractory cases of congenital syphilis from the serological point of view are, as a rule, those that first come under observation in later childhood, and are included under the term "lues tarda." Many of these cases persist with positive Wassermann reactions long after the outstanding physical manifestations have healed, and despite prolonged antisyphilitic treatment. Glynn, Roberts, and Bigland, in their Medical Research Council Report,[11] suggest

very strongly that strains of *Spirochæta pallida* resistant to mercury may be produced by the prolonged administration of this drug in submaximal doses. Analogous results from arsenical treatment have been recorded by Klauder,[12] who has shown that it is possible to produce arsenic-resistant strains of *S. pallida* in rabbits by giving them small subcurative doses of arsenobenzol and inoculating the strain through several animals. The cases here recorded come under a combination of these two categories, as before their bismuth treatment they had all received repeated courses of intramuscular arsenic combined with mercury by the mouth. The cases are shown in the accompanying table, the intensity of the Wassermann reaction being recorded by the number of "pluses" in each case:—

Case.	Age.*	W.R.*	No. of A. injections.	Time under M. and A. tr.	W.R. after A. tr.†	Age at commencement of bismuth therapy.	Total number of bismuth injections.	W.R. after bismuth.†
1	8 y.	3	12	6 m.	1	8	6	—
2	7 y.	4	24	18 m.	2	8	12	2
3	8 y.	4	24	12 m.	3	9	12	1
4	6 y.	4	34	3 y.	1	9	6	—
5	10 y.	4	36	2 y.	4	12	6	4
6	3 w.	2	36	3 y.	4	3	12	±
7	13 y.	2	12	6 m.	2	13	12	—
8	4 y.	3	12	6 m.	3	4	12	±
9	9 y.	4	6	3 m.	4	9	12	4
10	9 w.	3	6	2 m.	3	1	12	—
11	3 m.	3	18	2 y.	2	2	12	±
12	2 y.	2	12	6 m.	2	3	6	—
13	8 y.	4	24	2 y.	3	10	12	2
14	10 y.	4	32	3 y.	2	13	12	—
15	10 y.	3	36	3 y.	3	13	10	2

* On first attendance. M. and A. tr. = mercury and arsenical treatment. † Number of pluses. y. = years; m. = months; w. = weeks.

Comments.—Case 5. Attendance lapsed. 9. Irregular attendance. 14. Albuminuria at end of second course. 15. Albuminuria treatment stopped.

Conclusions.

Although it is impossible in any one centre to secure a large number of suitable cases, these results tend to show that it is possible to render serologically negative a certain proportion of apparently Wassermann-fast congenital syphilitics by means of bismuth, and that its use is not accompanied by any untoward symptoms, apart from the occasional occurrence of temporary albuminuria. It is suggested that these results are due to the fact that the *S. pallida* has become resistant to arsenic and mercury after prolonged treatment

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HOSPITALS AND MOTOR ACCIDENTS.—The Manchester and Salford Medical Charities Fund suggests that hospitals which treat motor accident cases should be brought in as beneficiaries in any scheme of compulsory insurance of motorists against third-party risks, and the governing body of the fund has passed unanimously a resolution urging this course upon the Government.—Lieut.-Colonel W. L. Kirby, chairman of York County Hospital, advocates the addition to all driving licences of one shilling to cover the cost of hospital charges caused by road accidents.

Clinical and Laboratory Notes.

AN UNUSUAL VAGINAL INFECTION IN A YOUNG MARRIED WOMAN.

BY E. WORDLEY, M.D. CAMB., M.R.C.P. LOND.,

PATHOLOGIST TO THE SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH.

IN an address reported in THE LANCET last week (p. 981) Colonel L. W. Harrison dealt with various pitfalls in the diagnosis of venereal disease, and stressed the importance of a very complete examination before giving a definite opinion on the nature of any suspected venereal infection. He quoted an illustrative case where, because a newly married woman developed a Bartholinian abscess shortly after marriage, a diagnosis of gonorrhœa was made—erroneously as it turned out after further examination—and caused very great distress to the parties concerned. A case has recently come to my notice where a similar mistake might easily have been made and a marriage wrecked. It proved a useful lesson against jumping to conclusions.

A young woman, aged 20, made a runaway marriage with a man a good deal older than herself, and against the wishes of her parents. Eight days after marriage and during the honeymoon she noted a profuse vaginal discharge and much irritation around the vulva. Thinking her husband had given her some venereal infection she came home to her parents. She was at once seen by her doctor who found all the signs suggesting an acute gonorrhœa. The girl's parents told him that if she had a gonorrhœal infection it was decided to institute divorce proceedings.

Smears from urethra and cervix were taken and sent to me for examination. Numerous pus cells were present and numerous Gram-negative diplococci both extra and intracellular were found, exactly resembling the gonococcus. I am certain that if similar slides had been sent up from a venereal diseases department with a diagnosis of gonorrhœa a return of "gonococci present" would have been made unhesitatingly. However, since I knew the details of this particular case, I stated that organisms resembling the gonococcus were present, and refused to commit myself more definitely. I said that if any question arose of giving evidence in any divorce proceedings I should have to examine the patient myself and take cultures if I was wanted to give any exact evidence. Accordingly, I made a personal examination of the patient. She had a thick yellow purulent vaginal discharge, the inguinal glands were enlarged, she was acutely tender on examination, and in short, presented all the symptoms of acute gonorrhœa. Films taken again showed numerous pus cells and Gram-negative intracellular diplococci exactly resembling the gonococcus. However, cultures on blood-agar yielded no colonies resembling the gonococcus but a pure growth of fairly large whitish rather opaque colonies. On staining these they proved to be Gram-negative diplococci of the exact size and shape of the gonococcus. But on first culture they grew luxuriantly on plain agar both at 37° C. and at room temperature. Maltose and dextrose were acidified but not lactose. Apart from the sugar reactions, the fact that abundant growth was obtained on plain agar at room temperature must completely rule out the possibility of the organism being the gonococcus.

The husband next came to see me stating positively that he had never had gonorrhœa and had now no urethral discharge nor anything to suggest an infection of the genito-urinary tract. I made a careful examination of his urethra, prostate, and urine. No signs of a urethral discharge were present. No pus cells or organisms were found in the urethra, prostatic secretion, or urine. Cultures from all three were sterile. I gave as my opinion that his wife was certainly not suffering from gonorrhœa, which opinion naturally gave the greatest satisfaction to both of them. In passing it may be remarked that the girl's parents had been chiefly responsible in emphasising the seriousness of her infection and the enormity of her husband.

The infection cleared up rapidly with simple antiseptic douches.

It appears certain that there was no possibility of the wife contracting her infection from anyone else, since both assured me most positively that until she went home to her parents they were hardly out of each other's sight. It is certain that the husband

had no genito-urinary infection of any sort, so one must assume that the wife was infected with this organism, somewhat resembling the *Micrococcus catarrhalis* or an aberrant staphylococcus, as a result of trauma incidental to the early days of the honeymoon. She told me that she had had a great deal of pain following the first coitus. Her mother, it may be added, was positive that the girl had no vaginal discharge of any sort before marriage, and the daughter said so herself. Yet here was a young woman who, shortly after marriage, presented all the symptoms of acute gonorrhœa. Slides showed pus cells and an organism identical morphologically in all respects with the gonococcus. A report of "gonococci present" would have been made without hesitation on these findings combined with the history and appearance of the patient. Unless divorce proceedings had been contemplated it is quite possible that I should not have advised any further examinations to be made. If so a very serious error in diagnosis would have been committed with disastrous results to the future happiness of a young married couple.

The bare possibility that the infection was not venereal was present in my mind when I first saw the patient, for many years ago, when I was working in Prof. L. S. Dudgeon's laboratory, he described to me a similar case which he had seen in his own practice. Such occurrences show, I think, the importance of a very complete and thorough examination of both husband and wife when there is the slightest element of doubt about a venereal infection.

NOTE ON AN ANAEROBIC STREPTOTHRIX OCCURRING IN SPUTA IN PULMONARY DISEASES.

By E. T. Thompson,

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THROUGH the coöperation of Dr. Mackenzie Douglas and Dr. Graham Willmore I have been enabled to investigate an anaerobe occurring in the sputum of cases suffering from tuberculosis, chronic bronchitis, bronchiectasis, and asthma which somewhat resembles the organism described by myself in a record of some symbiotic phenomena, with a note by Dr. R. O'Brien, published in THE LANCET (1920, ii., 186).

In the course of that work *Bacillus tuberculosis* cultures were infected with *B. proteus vulgaris*, the common proteolytic organism of the intestines. Briefly stated, the result was that after seven days' incubation at 37° C. *B. proteus* died out, but a Gram-positive non-acid-fast organism resembling the acne bacillus was found, and this organism could only be cultivated under anaerobic conditions. Further, a similar organism was isolated, when, instead of *B. tuberculosis*, a streptothrix was employed. The interest of this latter observation is increased by the fact that when the aerobic streptothrix of actinomycosis was employed in the experiment, the resulting anaerobe closely resembled the *Cohnistreptothrix israeli*, the common cause of actinomycosis in man in Europe. The organism did not resemble any of those commonly found in accidental contaminations, and every attempt was made to prevent the entry of adventitious bacteria into the mixtures under experiment.

Since the publication of the above results approximately 2000 sputa from 1000 patients have been examined at the Ministry of Pensions Hospital, Orpington, and Queen's Hospital, Sidcup. Of this number 118 cases were actively tuberculous with positive sputa. From these cases 172 sputa were treated and examined, and the anaerobic streptothrix was demonstrated in every case. In the other sputa the anaerobe was shown to be present in 65 per cent.

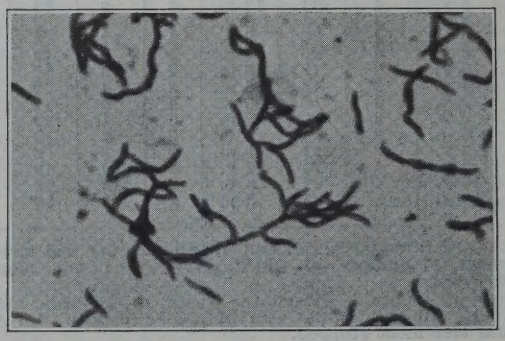
Method of Isolation.

The method employed in the isolation of this organism is as follows:—

About 0·5 c.cm. of sputum is introduced into a test-tube containing 10 per cent. glycerin in 1 per cent. peptone water 3 to 4 inches deep which has been previously autoclaved at 120° C. for 30 minutes. The mixture is then incubated at 37° C. It is not necessary to incubate under the usual anaerobic conditions, as the concomitant organisms produce a state of anaerobiosis which enables the anaerobe to grow when present.

Its appearance can generally be demonstrated in four to seven days, at the end of which time it usually reaches its maximum growth.[1] In Gram-stained specimens prepared from the sediment it will be easily recognised when present, as it is generally the only Gram-positive bacillus which develops, the other organisms present being mainly cocci. It resembles the tubercle and diphtheria bacilli, and sometimes shows true branching.

The removal of a portion of the sediment for the preparation of specimens or making cultures presents no difficulty if a finely drawn capillary tube with the upper end sealed is inserted into the sediment. When the capillary tube reaches the bottom of the sediment the sealed end is broken off, when some of the sediment will enter by capillary attraction. The tube is resealed before withdrawal to prevent any of the supernatant fluid entering. If on examination the growth of anaeromyces is considered sufficient for isolation, the remainder of the material is expressed into about 5 c.cm. of sterile water, saline, or broth. From this suspension shake cultures are made in 4 per cent. glucose agar 3 to 4 inches deep into a series of three tubes by inoculating from one tube to the other.



Microphotograph of organism from glucose agar culture. (× 1700.)

At the end of seven days small irregular opaque colonies will be seen in the depth of the medium resembling those of the acne bacillus. To examine the colonies and make subcultures a cut is made round the lower end of the test-tube with a glazier's diamond, and the cut is touched with a red-hot point of glass which will cause a clean crack round the tube, the bottom of which can now be easily removed. The column of glucose agar is blown into a sterile Petri dish. Isolated colonies can now be pricked with a straight platinum wire, for examination and making stab culture into 4 per cent. glucose agar. In three to five days growth will be noted, starting some distance below the surface of the medium. Specimens prepared from the pure cultures are Gram-positive but not acid-fast, and generally show many branching forms (see figure).

An Antiserum.

Marked deviation of complement with the sera of patients suffering from pulmonary complaints have been obtained by using a suspension of this anaerobe as an antigen. Although the organism is non-pathogenic to the lower animals a potent antiserum can be obtained by injecting it into rabbits, the serum having a high degree of agglutinability and complement fixation with its homologous antigen and *B. tuberculosis*. A few experiments have been carried out with this serum with a view to protecting guinea-pigs against infection by *B. tuberculosis*, and the results have been encouraging. Vaccines prepared from this organism have been used in cases of

[1] Castellani, A., Douglas M., and Thompson, E. T.: Jour. Trop. Med. and Hyg., June, 1921, xxiv., 149, and July 15th, 1925, xxviii., 257.

tuberculosis, chronic bronchitis, and bronchiectasis sometimes associated with asthma, with favourable results. Some cases have cleared up under this treatment which have proved resistant to all other methods.

In conclusion, I tender my thanks to Dr. Douglas and Dr. Willmore for the practical interest they have taken in this subject, and to Dr. David Thomson for the microphotograph.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

AT the meeting of this Section on Nov. 6th, with Sir HOLBURT WARING, the President, in the chair, a discussion was held on the

SURGERY OF THE SPINAL CORD.

Mr. HUGH CAIRNS said that usually the earliest symptom of a spinal tumour was pain in the back or along the distribution of the spinal nerves. It was described by patients as neuralgic, burning or tingling, or possibly it was only a sensation of tightness around the trunk or limbs. Often it was aggravated by exercise, coughing, bending, straining at stool, or even by lying down, so that some patients preferred to sleep seated in a chair. They would often admit that their extremities were cold, or that one foot was colder than the other, and the pain did not yield to drugs or measures which cured other pains. In the early stages careful examination would often disclose one or more signs of an early and incomplete Brown-Séquard syndrome. Stiffness of one leg, numbness of one foot, a creeping sensation about the ankles, or slight urgency of micturition during excitement or during a particularly bad attack of pain were some of the other symptoms that occurred before weakness set in. Often diagnosis was possible on careful clinical examination alone, but lumbar puncture provided confirmation. Usually there was blockage of the subarachnoid space, and Queckenstedt's test was valuable for its recognition. Positive results of the test could be seen even when there was no change of colour in the cerebro-spinal fluid. Mr. Cairns thought that the value of this test after operations had not hitherto been realised, and it was too often omitted during the preliminary investigation of a case. Sometimes the subarachnoid space was partly blocked and there was a delayed rise of pressure in the cerebro-spinal fluid, as shown by the manometer.

Surgeons, of course, were especially concerned with the position of spinal tumours lest they should overlook an easily removable tumour by exploring at the wrong level. In one of his cases the upper level of the sensory loss was at the eleventh thoracic dermatoma, but further investigation after lumbar puncture showed a disturbance of sensation up to the level of the fifth, and the tumour was found at the sixth thoracic segment of the cord. This showed the importance of repeating the neurological examination after doing lumbar puncture. The upper level of the sensory loss should be tested not only by light touch, prick, heat and cold, but also by tuning-fork and by investigation of the patient's ability to appreciate numbers written on the skin. In compression the posterior columns were often affected more intensely, and at an earlier stage, than the lateral columns. Gordon Holmes had pointed out that careful observation of the movements of the intercostal and abdominal muscles would sometimes show the upper limit of the paralysis, while the tendon reflexes must be studied to determine the level of the lesion at the cervical and the lumbar enlargements. Mr. Cairns thought lipiodol should be used not to diagnose the presence of a tumour but rather to ascertain the exact level of a tumour which had been detected by clinical methods. It should be used, moreover, only when preparations for operation had been made. The lipiodol test was especially valuable in cases with two or more tumours of the cord. He was surprised that multiple tumours of the cord and its roots were not more often seen.

Little was known about disturbance of spinal conduction, went on Mr. Cairns, but compression of the cord by tumour should be distinguished from destruction of the cord by injury. In rare cases compression caused severe degeneration, precluding the possibility of restoring function, even after the tumour had been removed. As a rule, however, remarkably little degeneration of the cord had been found in patients who had shown severe paresis in life. The process of recovery varied remarkably in different cases. Sometimes it was evident in the paralysed limb within a few hours of removal of the tumour and soon became complete; in other cases it was delayed for a few weeks, but might nevertheless be equally complete. In other cases, again, it did not begin until a year or more after the tumour was removed and was then slowly progressive. On visiting Breslau last summer he found that Prof. Foerster had been operating on apparently hopeless cases of spinal compression, and had kept some of them in hospital for many years. One was a case of paraplegia in flexion, which has been treated for six years as disseminated sclerosis. Foerster removed a tumour from the first thoracic nerve root, and during the following 15 months the limb was straightened under anæsthetics and eventually the patient walked well. No case of spinal tumour was hopeless, and every effort should be made to get adequate institutional and orthopædic treatment during recovery.

Meningitis serosa circumscripta showed blockage of the subarachnoid space. If the adhesions could be broken up at operation the patient recovered in spite of the fact that in the few cases that had died post-mortem examination showed gliosis and scattered degeneration of the cord. The presence of adhesions and blockage of the subarachnoid space interfered with spinal conduction. Mr. Cairns found that satisfactory results from operation for spinal tumours could only be got if obstruction to the circulation of the spinal fluid was relieved. It was well to employ Queckenstedt's test after operation, especially in cases which were not recovering at the expected rate, for the subarachnoid space might still be blocked after removal of the tumour; there might be some adhesions at the site of the operation, or the tumour might have been incompletely removed, or another tumour might be present elsewhere in the spinal canal.

Mr. Cairns concluded by referring to the question of operative injury. The cord, he pointed out, was a very delicate structure, which should be respected even more than the brain; sometimes it came in for too much manipulation and its conductivity was thereby lowered. If due gentleness was observed in handling it at operation it should not show much depression afterwards.

The Queckenstedt Test and Lipiodol.

Mr. GEOFFREY JEFFERSON said that the principles of operation for cord tumours were in general those of the treatment of spinal compression as a whole. This was now on so firm a basis as to allow little room for discussion, and the methods employed were more or less stereotyped. There were, however, one or two points on which further information was still needed. The first was in regard to the Queckenstedt test, the importance of which had been emphasised by Mr. Cairns. It was true that by compressing the jugular veins one could judge, from the rapidity of the drops, whether blockage was present; but it was not a complete test and would not suffice for determining whether minor grades of blockage were present. At a meeting where he had demonstrated the results of the Queckenstedt test he had been criticised

for speaking chiefly in terms of spinal compression, and it was said that he had not paid enough attention to the pain of spinal tumours. That was, in a way, a just criticism; it was true that the typical neurofibroma of the posterior root had for a time pain as its chief characteristic. But pain of a root character was not an outstanding symptom of anything like all spinal tumours. Any unexplained pain might be due to a posterior root tumour; but he did not know of anyone having been brave enough to operate for that pain alone when the legs showed no interference with conduction.

He had had a case of massive tumour of the cauda equina which filled the whole vertebral canal from the level of the first lumbar to the first sacral vertebra, but all the young man complained of was a little pain in his groin; he did not make a point of that pain, and it could only be elicited by pressure. He had bladder trouble and foot-drop, and he had been discharged from the Army as a case of hysteria.

Mr. Jefferson agreed with Mr. Cairns's remarks about lipiodol. Many cases were reported of supposed damage caused by lipiodol which did not bear close analysis, since it did not seem clear that the damage was not due to the disease process already present. It had been made evident that air caused a greater reaction in the cerebro-spinal fluid than did lipiodol. The profession seemed to be coming back to reliance on lipiodol for giving the exact level of the obstruction. In using the Queckenstedt test it was necessary to make certain that there was no fault in the apparatus.

He recalled the case of a young man who complained of tingling in his fingers and who was found to have some wasting of the interossei and disturbance of sensation at the sixth cervical segment. The Queckenstedt test was done and proved positive—i.e., there was no rise of pressure on jugular compression. At operation no cause was found for the block. Therefore, in three weeks the speaker did a second Queckenstedt test, using a larger needle, and made sure there was a free flow of fluid; on this occasion the test was negative.

Mr. Jefferson had heard it said that after operations in the mid-thoracic region there was likely to be severe vomiting, so severe sometimes as to cause death, and the suggestion had been made that the pain might be due to upset of the vegetative centres which controlled the stomach.

A woman aged 21 had come to him with very rapidly advancing symptoms of a complete transverse lesion of the cord. The condition was diagnosed as a transverse myelitis. He operated upon her and found a paravertebral sarcoma. That was entirely cured by radium, but without any improvement in her legs. At the end of three months she began to vomit; so severely did she vomit, and so distended was she, that he wondered whether she had a secondary deposit. Her blood-urea was five times the normal, and he did not doubt that was the cause of the vomiting.

This showed the importance of taking the blood-urea in all cases of spinal tumour before operation.

Discussion.

Mr. A. J. WALTON said that for prognosis in compression of the cord he had come to rely more and more on the time of development of the size of the compression. If the cord had not had time to adjust itself to its new position—i.e., if complete pressure symptoms developed in a few days—the chance of its recovering, no matter what was done, was very slight. This was a very different opinion from what was thought a few years ago, when the prognosis was based on the extent of the clinical damage and no regard was paid to the time element.

Dr. G. F. STEBBING said he had tried section of the anterolateral columns to relieve the pain of tabes, endarteritis obliterans, and malignant disease of the pelvis. In all these cases considerable relief was given, and in many it was complete. All the patients with tabes, however, had a recurrence of pain at some time after operation, though in one case the period of freedom was as long as four years. In some cases of pelvic malignant disease the pain was permanently cured. In only two cases were there evil results: one child had paralytic ileus six days after the operation, and in another there was temporary paresis of the legs, probably because of free handling of the cord.

Dr. GEORGE RIDDOCH thought the importance of root pain in extramedullary tumours could scarcely be exaggerated, though admittedly it was not always present. It might precede spinal compression by long periods. In tumour of the anterolateral column root signs might be absent, and location of the tumour was difficult. Progressive paraplegia in an adult justified suspicion of a spinal tumour. Meningitis serosa circumscripta differed in its clinical features, in most cases, from spinal tumour. The root pain of the former was diffuse and involved the supply of several roots as the condition progressed, on one or both sides of the cord. It had, however, the same slow malignant development. As a rule the position of the pain accurately indicated the site of the tumour. As to the mechanism of the production of symptoms, Sir Henry Head and he had laid stress on the vascular changes as being the main cause of the paraplegia itself, also as being the reason why the symptoms might clear up after operation. Dr. Riddoch doubted whether direct compression of the neural elements played an essential or important part in the disturbance of function in compression lesions, except in later stages. He agreed with Mr. Walton about the rapidity of symptoms of compression indicating the gravity of the prognosis.

Mr. J. PATERSON ROSS spoke of the case of a woman, aged 40, who was suffering from a spinal tumour, which was considered to be lying in an extradural position. In the opinion of Prof. G. E. Gask it was removed completely, but the patient did not improve, she slowly went downhill. He now thought it likely that the interdural projection of the tumour had been missed; the dura had not been opened.

The PRESIDENT remarked that little mention had been made of the use of radium for spinal cord tumours. He had had no experience of radium in these cases, but he had heard of a number in which radium had apparently stopped the growth.

Mr. CAIRNS, in the course of his reply, said that small doses of radon could safely be applied close to the cord, but large doses were contra-indicated, because they might destroy the cord as well as the tumour. Surgery of the spinal cord gave a good opportunity of observing the disturbance of the visceral and sympathetic fibres.

SECTION OF OPHTHALMOLOGY.

AT a meeting of this Section on Nov. 8th Mr. CYRIL WALKER, the President, took the chair, and after a number of clinical cases had been shown a paper on

RETINITIS IN DIABETICS

was read by Dr. P. J. CAMMIDGE. Although retinitis in the eyes of diabetics had been described some 70 years ago, there was still, he said, considerable doubt about its ætiology. The view at first adopted, and accepted by all the earlier observers, that the retinal changes were a direct result of the presence of an excess of sugar in the blood, had been abandoned by most modern authorities, mainly on the ground that the incidence of the complication and the severity of the primary disease did not show the relation which might be expected if this explanation were correct. The frequent presence of albumin, as well as sugar, in the urine of diabetics suffering from retinitis and retinal hæmorrhages had suggested an alternative hypothesis—namely, that the eye changes were dependent upon the effects produced by concomitant renal disease. The blood analyses he had carried out showed that in about 20 per cent. of cases there was a pronounced retention of nitrogenous waste products similar to that met with in severe nephritis, but that in the majority the evidence of renal insufficiency was comparatively slight, while in about 25 per cent. of cases it was entirely lacking. It was therefore probable that, although renal defects were

the primary cause of the retinitis in a small proportion of cases, and were possibly a contributory factor in others, they were not an essential feature of the ætiology.

Apart from persistent or intermittent hyperglycæmia the most constant chemical abnormality in Dr. Cammidge's experience had been a low calcium level in the fasting blood, distinctly pathological figures having been obtained in all his cases, except those in which the retinitis was of the "albuminuric" type, with pronounced albuminuria and serious nitrogen retention. There was no evidence that the low percentage of calcium in the blood of typical cases of diabetic retinitis was the result of an "acidosis"; and although in some instances it might be accounted for by an excessive loss of lime salts in the fæces and urine, there were others in which a normal fæcal ash and a normal excretion of calcium in the urine had been found. The fact that retinitis was rarely met with in diabetics before the age of 35, and usually occurred in patients who had suffered from a mild anapothectic glycosuria for many years, probably had a bearing on the question, for such patients seemed to be particularly liable to develop arterio-sclerosis and calcification of the peripheral vessels. The vascular lesions had been shown to resemble closely those produced experimentally in rabbits by prolonged feeding with cholesterol, and it was therefore not unlikely that the persistent lipæmia found with increasing frequency in elderly diabetics with the passage of time, especially if restriction of the carbohydrate of the diet had been compensated by a liberal allowance of fat, was the determining cause of the vessel changes and, maybe, of the deficiency of calcium in the blood, since there was experimental evidence that the metabolism of cholesterol and calcium were related, a fall of the one in the blood being associated with a rise in the other and vice versa. The blood analyses he had carried out had shown a low calcium and an excess of cholesterol in cases where the excretion of lime in the fæces and urine was not excessive, but a normal cholesterol and low calcium where examination of the urine and stools revealed an unusual loss of calcium by these channels, which seemed to indicate that the deficiency of calcium in the blood was not always due to the same cause. Whatever might be the exact origin of the condition in any particular case, there could be little doubt that the diminished coagulability of the blood consequent upon a poverty of calcium was one of the factors, and possibly the most important factor, in the production of the local hæmorrhages which were of such grave prognostic significance in diabetic retinitis. Further proof of the soundness of this conclusion was furnished by the results of treatment, for it had been found that the administration of lime salts by the mouth in sufficient amount to maintain the calcium content of the blood within the normal range prevented the occurrence of local hæmorrhages in simple diabetic retinitis, although not in retinitis of the albuminuric type. Control of the hyperglycæmia and glycosuria, either by diet or with insulin, had no effect upon the tendency to local hæmorrhages, but it usually brought about a rapid improvement in the vision of the patient. This, and the fact that retinal hæmorrhages sometimes occurred without previous symptoms in patients who had been sugar-free for long periods, suggested that the changes interfering with vision and the hæmorrhagic tendency were of independent origin, the former probably being the result of local defects directly induced by the diabetic state, and consequently yielding to antidiabetic treatment, whereas the latter arose from general vascular changes which were not a direct result of the metabolic disturbances induced by the diabetes, and therefore required independent treatment.

Discussion.

Dr. R. D. LAWRENCE said he was anxious to learn something of the mystery of the causation of diabetic retinitis. He had spent a good deal of time looking through notes of his cases to see what proportion of diabetic patients developed this retinitis, and what factors, besides the coexistence of diabetes, seemed to be behind its production. The hospital cases which he had looked up showed a higher percentage of retinitis than Dr. Cammidge gave, for about 11 per cent. of the diabetics were diagnosed by ophthalmic surgeons to have definite retinitis. His figures were, in fact, nearer to those given by German workers. No explanation seemed to have been given for the hæmorrhages and exudates in the eye. A study of the literature from the ophthalmological standpoint showed that many people denied there was such a condition as diabetic retinitis apart from arterio-sclerosis—i.e., the latter was always present in these cases. This was, he thought, laying too much emphasis on the vascular side. It was generally admitted that all these cases had a high blood pressure, also cardiorenal and vascular symptoms, as shown by the albuminuria and the presence of casts in the urine. Ruling out those cases, however, there remained a number in which nothing seriously wrong could be found in the kidneys or general vessels, and in which the blood pressure was not abnormally high. These latter were the cases which interested him most.

Dr. Lawrence said it was news to him that the blood calcium in these cases was considered important, and he would like to know what Dr. Cammidge regarded as a low figure (Dr. CAMMIDGE: 5·8 to 6·5 is the normal for whole blood). As to the cases which did not show ordinary arterio-sclerosis Dr. Lawrence had a suggestion to offer—namely, that the real damage in diabetes was that done to the endothelium of the vessels; there seemed to be a calcification in the mesial layer of the arteries, followed by its proliferation. This would be a very serious matter in the case of eye vessels. Once this had begun in the eyes of the diabetic there probably was never a return to the normal. Another possible factor in the causation of exudates and hæmorrhages was change in osmosis caused by hypoglycæmia. These changes were responsible for the production of cataracts in diabetics. Since the introduction of insulin he had noticed, following its use, a temporary swelling of the lens. Forty per cent. of the severe cases which he treated in this way showed misty vision for the first few days or hours while the blood-sugar was being brought to the normal level. He would welcome opinions on these two suggestions which he had put forward. The change seemed to be produced by prolonged diabetes more than by the immediate presence of sugar.

Lt.-Col. A. E. J. LISTER asked what was the proportion of cases in which the retinitis cleared up, and in what form and dosage the calcium was given. In India the condition was quite common, and the proportion of retinitis cases among diabetics was higher than the figure Dr. Cammidge gave. The age-incidence was lower in India than in Britain, but the Oriental aged quicker than the European.

Dr. CAMMIDGE, in reply, said his cases had been private ones, and he had only quoted cases as retinitis which were sent to him as such—he did not claim to be an expert in the examination of the eye. His figures might show a low proportion because the condition was pronounced in them all. He found it difficult to form decided views about the ætiology, but he was inclined to agree with Dr. Lawrence that the retinitis was not altogether due to the sugar. But he certainly considered that the œdema which interfered with the vision was due to the sugar, because the condition of the eye cleared up so rapidly when the patient was treated, especially now that insulin was available. As to treatment, the subjects of diabetic retinitis were generally either elderly or very old, and he had a strong objection to giving insulin to elderly people if it could be at all avoided, for they already had a certain amount of change in the heart muscle, and a rapid change in the amount of sugar going to the heart might have very serious consequences. If elderly diabetics could be treated by dieting they were much more comfortable, and they

responded to the treatment quite well, though they took longer to do so. In some cases one was bound to use insulin, but care must be taken that the sugar was not rapidly reduced. In his practice the calcium in the blood was estimated as regularly as the sugar. The form in which he usually gave the calcium was as calcium lactate in an emulsion of liquid paraffin, the latter because most of these patients had some intestinal catarrh. Five, six, or seven grains a day was the dose; it was a prophylactic, and it was necessary for the patient to take it for the rest of his life. Recently he had tried the effect of vitamin D; in some he had tried parathyroid, but the results had not been such as to make it worth while to continue.

Sarcoma of the Iris.

Mr. H. B. STALLARD showed pictures of and described a case of leucosarcoma of the iris, which was under the care of Mr. W. S. Duke-Elder. The man, aged 69, complained of failure of vision in the left eye, and was thought to have a small tumour of the iris in the right eye. It had a nodular surface, and there were small capillary loops on it. The tumour appeared to be fixed to the iris. There were also striæ in the lens. Excision of the eye was declined, therefore Mr. Duke-Elder did iridectomy. A conjunctival flap was dissected out in the vicinity of the tumour, and the anterior chamber was opened by a keratome incision. This incision was afterwards enlarged and the tumour was removed with a good piece of iris on each side of it. It was composed of spindle-shaped cells, having an oval nucleus, and there was a marked absence of intercellular stroma. The blood-vessels had very thin walls, and there was complete absence of pigment cells and of pigment granules between the cells. Later the patient consented to have his eye removed, and serial sections of the globe revealed no other abnormality. Mr. Stallard had been able to find records of 21 cases of so-called leucosarcoma of the iris.

Mr. TUDOR THOMAS read a paper (by Mr. M. S. Mayou and himself) on a case of sarcoma of the iris, which appeared to have originated from a mole.—Mr. MAYOU said his first impression was that it was a cyst, because of the discoloration of the iris; there were posterior synechiæ, and the growth seemed to transilluminate, but Mr. Thomas's view that it was a malignant growth proved correct. The growth was spreading along the surface of the iris, and had begun to invade the ciliary body. The deeper portions of the iris were very little involved.

SECTION OF THERAPEUTICS.

THE USE OF ERGOT.

A MEETING of this Section was held on Nov. 12th, with Dr. PHILIP HAMILL in the chair, to discuss investigations on the Proper Method of Including Ergot in the Pharmacopœia.

Dr. J. H. BURN opened the discussion. He said that his communication was a joint paper, the investigations having been carried out at the Pharmacological Society with the help of his colleagues there. The method used for standardising the various solutions was that of Broom and Clark, which depends on the power of ergot to reduce the contraction due to adrenalin in strips of uterine muscle. Dr. Burn emphasised the fact that the action of liquid preparations obtained from ergot depends on the presence of ergotoxine or ergotamine. Histamine is present in insufficient quantities in the usual liquid extracts to produce any effects. It was not easy to decide on a suitable standard for ergot. The method used with digitalis and strophanthin, that of mixing the various samples of the drug and using a preparation made from them when its activity had been ascertained, as the standard, was not altogether suitable here. The samples of ergot obtained from Spain and Portugal were much richer in ergotoxine than those obtained from Poland and Russia, nor did the quality of the samples necessarily remain constant for any given place. In the United States, however, a similar method of standardisation to that used for digitalis was followed. A mixture of several varieties of ergot was made and extracted, and the fluid kept for six months. The standard fluid thus produced contained, on examination, 0·03 per cent. of ergotoxine phosphate. Dr. Burn and his colleagues, in attempting to establish their standard, had at first excluded Polish and Dutch ergot from their experiments and had taken the mean obtained by use of Spanish ergot. This had worked out at 0·10 per cent. which was found to be too high a standard to be followed by pharmacists, and they had subsequently reduced it to 0·05 per cent.

Methods of Extraction and Deterioration.

Dr. Burn then produced some interesting figures to show the efficacy of the various methods of extraction of the drug at present employed. The use of water only, which was the method set out in the British Pharmacopœia, gave an ergotoxine yield of less than 0·016 per cent.—in other words it was practically inert. The German method of using 50 per cent. alcohol gave 0·02 per cent.; the Dutch method of using 50 per cent. alcohol with 1 per cent. tartaric acid, and the American method of using 50 per cent. alcohol with 2 per cent. of hydrochloric acid each gave 0·10 per cent. Other acids, such as citric, phosphoric, and boric, could also be used with 50 per cent. alcohol. Tartaric, citric, and hydrochloric gave the best results when used with 50 per cent. alcohol, and the figure they yield (0·10 per cent.) is about as high as can be obtained.

Dr. S. WOKES submitted observations on extraction and deterioration arising out of the work described. He said it was extremely difficult to extract the whole of the ergotoxine from any given specimen. He described the method of fractional percolation used in his experiments, showing that each fraction takes out successively less ergotoxine from the sample used. Spanish and Polish ergot seldom yielded less than 0·10 per cent., while Polish and Russian ergot usually give about 0·03 to 0·05 per cent. That is to say that Polish and Russian ergot are useless if the standard is to be maintained at 0·05. The minimum standard for these samples would be 0·015 and the maximum 0·025 per cent. If they are to be used at all, he said, the standard must be lowered and it is possible to reduce the extracts from good samples to this level. Dr. Wokes then went on to speak of the important question of deterioration. He found that a sample of strength 0·07 per cent. when kept in the incubator deteriorated rapidly; by the end of four weeks it had lost more than half its activity; at the end of nine weeks it had lost nine-tenths. A similar specimen kept in the ice-chest was slower in its deterioration; at the end of twelve weeks it had lost half its activity. A sample kept at room temperature lost its activity at a rate somewhere between these two. He said that ergotoxine phosphate (1 per cent.) in aqueous solution also deteriorates; kept in the ice-chest it is found to have lost half its activity at the end of six months. Similar results were obtained with ergotamine tartrate; and ampoules of 0·05 per cent. ergotoxine phosphate fell to half their strength in 24 weeks. Samples of powdered and defatted ergot appeared to be much more stable and took up to two years at room temperature to lose their strength. Dr. Wokes therefore advised that ergot should always be kept in the powdered defatted condition, to be made up into fluid form in small quantities as required. There was, of course, the possibility that the addition of some stabilising substances might prevent the rapid deterioration, and investigations were also being attempted along these lines.

Possibilities of Oral Administration.

Dr. BURN then returned to complete his remarks, and said that on the showing of the experiments described by Dr. Wokes the United States Pharma-

copœia and the Dutch liquid preparations of ergot must be inert at the end of three months from their time of issue. As it was improbable that the preparations were ever used much before that period, and as the B.P. aqueous preparation was useless, one wondered how ergot had obtained its reputation as a therapeutic measure. It had, of course, been used in the first place because of the large number of cases of abortion occurring during epidemics of ergot poisoning. But in these cases the patients were taking the raw drug, not the extract, and it had had no opportunity of deteriorating. This, of course, raised the question of the use of ergot orally as a therapeutic measure. Clearly it could be released in the digestive tract and absorbed into the blood stream, but the question of rate was important. A series of experiments had been made on spinal cats, the blood pressure being recorded and the effects upon it of adrenalin and ergot noted; a certain number of cats who had received 1 g. of powdered ergot the previous night were examined. It was found that the reversal of the adrenalin action by the ergot (from pressor to depressor) occurred earlier in the cats who had had a previous oral dose of ergot than in those who had not. On the strength of these experiments Dr. Burn had formed the opinion that the rate of absorption is sufficiently rapid to be of use therapeutically. He thought that an injection of ergot after delivery could be followed up by oral administration daily during the puerperium where necessary, and indeed there might even be some reason to guard against a cumulative action.

The CHAIRMAN asked for experiences among those present in the use of ergot by mouth.

Dr. IZOD BENNETT said that the solid preparations he had used had always produced some effects, but had invariably been made up with quinine as well as ergot.

Dr. BURN said finally that there was some reason to suppose that the weaker extracts deteriorated less rapidly than the stronger, and that possibly the strong extracts lost their activity rapidly at first and subsequently became more stabilised. Experiments were being made to test this.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society, held on Nov. 11th, the chair was taken by Mr. DONALD ARMOUR, the President, and a discussion on the

RELATIVE VALUE OF THE DIFFERENT METHODS OF DIAGNOSIS IN GASTRIC DISEASES

was opened by Dr. J. A. RYLE. The methods of diagnosis applicable in diseases of the stomach, he said, were clinical, radiological, and chemical, with exploratory laparotomy where other means had failed. Gastroscopy had not established its claims. In every case without exception the clinical method was the most important, and all further investigations depended on inquiry into symptoms and ordinary physical examination. The introduction of accessory methods had led to a certain neglect of the older clinical methods, to a loss of clinical confidence, and a lack of appreciation of the scope of inductive reasoning based on the anamnesis. Judgments had been warped and wrong conceptions had grown through the misapplication of the newer tools. The expense of investigations was another argument for conserving clinical wits and curbing a natural wistfulness for the help of objective methods which, after all, were only final in selected types of case. The demand of a half-educated public for complete inquiries was a complicating factor, but if the profession complied with this demand it would bring discredit to medicine, do disservice to the public, and cease to maintain that breed of clinicians which had been one of the prides of British medicine.

The clinical study of the dyspeptic should include: (1) an inquiry into the personal and family history; (2) a very careful inquiry into subjective symptoms; (3) observations on physical and psychological type; (4) a general overhaul of all systems; and (5) a special examination directed towards the digestive apparatus. The collection and analysis of symptoms was as a rule the most useful and most important. Family history was of real value in duodenal ulcer and gall-stones, as well as in dyspepsias associated with general ill-health or psychological disturbances. Age, sex, occupation, habits, seasonal fluctuations of illness, and food or drug idiosyncrasies were all important factors. Worry, fatigue, and sedentary work were potent agents in gastric disturbance, while a dyspepsia occurring regularly in spring and autumn should suggest duodenal ulceration. Nervous and anxious or phlegmatic temperaments were associated with special types of gastric reaction. The general overhaul might reveal little or much, but the little might be as valuable as the much. A rosaceous rash might clinch the diagnosis of true gastritis, as a fixed pupil or absent knee-jerk would draw attention to the tabetic crisis. The routine investigation should include a note on the skin and musculature of the abdomen, the presence or absence of cutaneous hyperalgesia or local alterations of abdominal reflexes, the conformation and contours of the abdomen, and tender points or areas of muscle guard. The teeth, tongue, fauces, stools, and vomitus must be inspected. This lengthy survey would often save time and patience expended in experimental treatment.

Classification of the Dyspepsias.

Dr. Ryle grouped the dyspepsias as follows:—

1. *Habit dyspepsias*, including over-eating, under-eating, over-work, lack of occupation and exercise, insufficient mastication, and constipation.

2. *Nervous or psychogenic dyspepsias*, including ærophagy, exhaustion, worry and anxiety states, hysteria, hypochondriasis, and refusal of food.

3. *Toxic and infective dyspepsias*, including alcohol and tobacco, indigestion, oral sepsis, tuberculosis, anæmia, debility, and visceroptosis.

4. *Irritative dyspepsias*, including ulceration, chronic infections of the appendix and gall-bladder, special sense disturbances like astigmatism, and central nervous lesions like tabes dorsalis.

5. *Mechanical dyspepsias*, including pyloric stenosis, hour-glass stomach, chronic extensive ulceration, cancer, and certain complications of gastro-jejunostomy.

In the first three of these groups, which probably comprised more than half the total seen in consulting work, radiographic investigation and gastric and stool analyses were not indicated and did not give much assistance, except that a test-meal might be a useful confirmation of the diagnosis of a true gastritis. As a means of reassurance to the patient these investigations might be useful, but a meticulous overhaul, a simple explanation, and a vigorous reassurance were usually quite effective. In the two other groups, however, prompt accessory examinations were essential. In any case where ulceration, stenosis, or cancer was reasonably suspected the patient should have a careful X ray examination, including serial snapshots and a detailed report by the radiologist of his method, the times of examination, and the screen observations. If there was hæmorrhage or perforation, however, treatment should precede investigation. There must be absolute certainty of diagnosis when the decision lay between a medical and a surgical campaign. The radiological demonstration of an ulcer was the most accurate diagnostic evidence obtainable; there might be an active ulcer without occult blood, and anything from achlorhydria to hyperchlorhydria might be found in the test-meal of gastric ulcer. In duodenal ulceration the climbing hypersecretory curve occurred in 70 per cent. of cases and was a valuable aid to diagnosis and treatment. A high peak of acidity with rapid emptying contra-indicated gastro-jejunostomy, while a gradually climbing curve with delayed emptying favoured it. Test-meal and stool examination were of no positive value in

reflex dyspepsias, but a full survey of the alimentary and bile tracts might be advisable or occasionally imperative. In general, therefore, accessory methods were of little positive value in functional disorders of the stomach due to general causes; they were often helpful in functional disorders due to extrinsic organic disease, and they were indispensable allies of the clinician in structural disease.

Radiological Examination.

Dr. G. H. ORTON claimed that radiographic examination was superior to all others in the diagnosis of organic gastric disease, provided that it was carried out by an expert with long experience. He showed a series of lantern slides supporting this claim. Very little reliance was now placed, he said, on the indirect evidence afforded by X rays—i.e., the information given by the type of stomach, rate of emptying, and peristalsis. The direct evidence, however, was very nearly 100 per cent. accurate in expert hands. Many of the ulcers shown in his slides were very small and would not be detected by a single or a casual view. The axiom that an ulcer on the lesser curvature produced an incisura on the greater curvature, due to spasm, did not hold when the ulcers were very small. The results of medical treatment should be checked by a very large series of exposures; often an ulcer would only show in one out of a very large number. Healed ulcers showed an alteration of the rugæ of the stomach; transverse ribbing was typical of the scar of an old ulcer. Duodenal ileus should be detected, as it tended to create ulceration, and after gastro-jejunostomy it caused jejunal ulcers.

The Fractional Test-meal.

Prof. E. C. DODDS sent a paper which was read in his absence by Dr. J. D. ROBERTSON. He maintained that the passing of tubes, collection of specimens, and washing out of the stomach were the most important part of the fractional test-meals, and that their delegation to inexperienced persons accounted for the alleged failures of the method. First of all it was essential to see that the stomach was empty before the test-meal entered it; the aspiration tube must be moved about and care must be taken to see that it did not get blocked by mucus. No matter how clean the resting juice, the stomach should be washed out with water after it had been emptied as completely as possible. A technique had been adopted of passing two tubes, down one of which warm water was pumped by a record syringe, while an assistant aspirated through the other tube. If there were obstruction or cancer, several pints of water would be required before the washing came back clean. Then a pint of gruel was given and specimens were withdrawn every quarter of an hour for two and a quarter to two and a half hours. Great care must be taken to see that the tube did not get diverted to the pylorus. Each specimen was gently aspirated, and then injected back again several times to ensure a uniform specimen. Dr. Robertson then showed slides illustrating the difference between a test-meal carried out by an experienced and by an inexperienced person. The results in the latter case were seriously misleading. A sudden drop on a smooth curve indicated that the tube had entered the duodenum. The analysis was comparatively easy; the important part of the technique of the test-meal lay in its collection. Its value lay in the certain diagnosis it afforded of pyloro-spasm due to ulcer, cancer, or functional disturbances, of achlorhydria associated with pernicious anæmia and of advanced cancer of the stomach. In pyloro-spasm there was a large volume of resting juice, a high total acidity and free acidity, and a slow steady rise right to the end of the test. In pernicious anæmia the stomach emptied very rapidly, there was a very low volume of resting juice and little disparity between the total acidity and the base line. In carcinoma there was a large volume of resting juice with high total acidity and complete absence of free hydrochloric acid; often the odour was foul and the colour dark. The disparity between total acidity and base line was very small, provided sufficient care was exercised in washing out the stomach. In a leather-bottle stomach the volume of resting juice was low, and the stomach emptied very rapidly; there was usually blood in the dark, foul, resting juice, and the disparity was not very great. It must be remembered, however, that in earlier cases of carcinoma there might be a normal amount of hydrochloric acid and the only suspicious points might be the foul resting juice and some blood. It was often difficult to distinguish between the achlorhydria of pernicious anæmia and that of benign achylia. To distinguish them, 1 c.cm. of a solution containing 0·75 mg. of histamine acid phosphate and 40 mg. of neutral red was injected subcutaneously at the end of the test-meal, and further specimens were taken every five minutes. Normally neutral red or free hydrochloric acid soon appeared in the specimen. The patient with pernicious anæmia gave no response to this histamine test—i.e., neither neutral red nor free hydrochloric acid appeared in the stomach. Histamine, however, should not be given if the blood pressure were very low.

Much controversy had centred about the significance of lactic acid in the stomach. Careful inquiry had shown that the qualitative tests for lactic acid were unreliable, but a quantitative technique had been worked out, and 46 per cent. of resting juices had been found to contain it. The conclusion reached was that lactic acid was not pathognomonic of cancer nor produced by the cells of the body.

Discussion.

Mr. A. J. WALTON, while agreeing that the clinical examination was extremely important, thought that it was impossible to arrive at a formula for assessing the relative merits of the various diagnostic methods, as their efficacy depended so much upon the skill of the investigator. He quoted a series observed by himself to illustrate the comparatively low percentage of positive diagnoses given by X ray examination in cases where a gastric lesion was revealed afterwards at operation. He would accept a careful clinical diagnosis of lesser curve ulcer in preference to an X ray report. Much publicity had been given of late to the opinion that no gastric or duodenal ulcer should be treated surgically unless stenosis was present, this dictum being based upon the results of medical treatment as confirmed by radiological examination. Barclay, however, had stressed the fact that ulcers under medical treatment would lose their œdema, and become invisible to X rays. The usual six months period of observation after medical treatment was far too short; it was necessary to wait a year or 18 months to be certain of cure. The test-meal had given a high percentage of positive results in ulcer of the pylorus and duodenum, but only 75 per cent. in carcinoma of the stomach. Its results were liable to be ambiguous in mixed cases of ulcer and carcinoma. The clinical examination was, therefore, more important in carcinoma than in non-malignant conditions, as both the X ray and the test-meal were liable to fail.

Mr. H. W. CARSON also stressed the value of clinical methods, especially of the estimation of muscular tone by palpation. He attached particular importance to the history. Of the ancillary methods he preferred radiography, which in some of the malignant cases that had been quoted would have settled the diagnosis in five minutes. X rays were superior to chemical methods in multiple ulceration, especially when ulcers were situated so high up as to be inoperable. Some high ulcers could not be diagnosed in any other way, and the method sometimes averted an unnecessary and dangerous intervention.

Dr. G. W. GOODHART did not consider the radiological method very superior to the chemical. The majority of patients did not suffer from gastric ulcer or carcinoma, the two conditions in which X rays gave the most information. The general practitioner, however, desired a test which would enable him to distinguish the functional case from the organic. Experts might be able to dispense with ancillary

methods, but not everyone who treated patients had their experience, and unfortunately very little had been done for the non-expert. He asked whether the test-meal could give the physician any idea of how to treat a functional disorder; he, himself, believed that it could.

Dr. G. E. VILVANDRÉ denied the existence of functional disorder without an organic basis. A gastric disorder might depend upon extensive pulmonary tuberculosis. Students should be taught to use their hands and eyes, and to ask the patient intelligent questions; that was the only way in which the profession—as distinct from the experts—would learn to diagnose carcinoma in its earlier stages. The radiologist could detect a penetrating ulcer of the lesser curvature, but could not yet say whether it was malignant. If all such cases were to be treated by medical means only bad mistakes must inevitably be made

Dr. A. CAWADIAS said that gastric disease was not primary, but a secondary or even tertiary result of a general or metabolic disturbance of the body, and nothing but a clinical examination would determine the diagnosis of the whole individual. Of the ancillary methods, radiology was the most important. The test-meal, he thought, was on the wane owing to its poverty of positive information; it gave information of a part only of the function of the stomach. Recent physiological research, by showing the intimate correlation that existed between organs, had invalidated the old conception of local functional diagnosis.

Dr. WALTER CARR, to illustrate the danger of dogmatism, quoted a case where malignant disease of the stomach with a very ambiguous symptom-complex had eluded clinical diagnosis for a long time, but had been revealed largely by the chemical investigation of the resting juice.

Dr. W. S. C. COPEMAN maintained that the abandonment of the test-meal on the continent did not prove that it was of no value. However, a test which depended upon the status of the tester was not a practical one, as there were not enough experts to go round, and this might be the reason why it had fallen into disrepute. The clinician wanted to know whether the stomach was reacting to the stimulus of food in a normal secretory fashion, and this information might be obtained in other ways than by estimating the free hydrochloric acid, the secretion of which was controlled by many factors. The possibilities of technical error were equally numerous. A more practical test was the total chloride estimation, which showed variations no wider than those of the hydrochloric acid test and probably gave a more accurate indication of the secretory activity of the stomach.

Dr. GEOFFREY EVANS remarked that most patients who came to a consultant suffered from functional dyspepsias. Diagnosis should proceed along the ordinary lines adopted in organic disease, the first stage being the anatomical diagnosis and the second the physiological. The ancillary methods could provide much valuable information, and each had its own value. Radiology could determine in a functional condition whether the stomach was short or long, how quickly it emptied, and the condition of its peristalsis. Similarly, the test-meal could give information available by no other means.

Replies.

Dr. RYLE agreed that those who could not be experts in radiology and chemistry had better leave these activities alone, but all practitioners of clinical medicine must try to be experts in symptoms. The test-meal gave such varying results in functional disorder that it was valueless, but he tried to apply it in all cases in which he considered the possibility of operation. Hyperacidity caused no symptoms; pain and discomfort were due to other causes, such as tonus, peristaltic abnormalities, and tension; loose thinking about symptoms could only be abolished by studying them. The chief symptoms of carcinoma—anorexia, anæmia, and fever—were clinical, but the other methods should not be neglected.

Dr. ORTON said that none of the very small ulcers were malignant, and that only X rays could determine the size and position of the lesion. Speaking of test-meals with tetra-iodo-phenolphthalein, he quoted the saying that "one had to be very robust to be a patient nowadays."

Dr. ROBERTSON also replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

A MEETING of this Section was held on Oct. 25th, with Dr. J. LAIT, the President, in the chair.

Argyria.

Dr. F. S. BOURKE showed a man suffering from argyria who was admitted to hospital on August 12th suffering from a sore throat and pains in his limbs. He gave a history of syphilis, and so was sent to the venereal department. His colour at once attracted attention. He stated that he joined the Army in 1896 and contracted syphilis in 1897. He served in India until 1908. While he was there some of the men suffered from sore throats, and as he had seen them cauterizing their throats with silver nitrate, he did the same himself. He first used silver nitrate in 1908.

The PRESIDENT said he had never seen a case of argyria, which was now, he thought, very rare. It had been more common formerly, when silver nitrate was used for treating gastric ulcer.—Dr. CYRIL MURPHY said he had seen this patient on a previous occasion, and at that time the pigmentation had only extended as far down as the abdomen.—Sir JOHN MOORE mentioned that some years ago he had seen a case which was the exact counterpart of the one now demonstrated. His patient had used silver nitrate for treating gastric ulcer.—Dr. R. A. Q. O'MEARA said that little was known about the pathology of the condition. The silver was deposited not only in the skin, but also in the internal organs. The silver formed with the albumin of the tissues an insoluble substance which was deposited between the cells, but not in the cells. He thought that the blue colour was more apparent in the face because of the relatively greater blood supply to the skin of the face as compared with the skin of other parts of the body.—Dr. E. T. FREEMAN said that in India silver nitrate had formerly been used as an astringent for the treatment of tropical diarrhœa. Possibly this patient had been given some silver for this condition while serving in India, as well as what he had used himself for cauterizing the throat.

A Case of Extrinsic Stricture of the Œsophagus.

Dr. R. R. WOODS reported the case of a man, aged 48, who was first seen early in August, having had dysphagia for two months.

At that time he could only swallow fluids slowly. He had glands on both sides of his neck and a lump in the right hypochondrium the size of an orange. The liver was enlarged and the spleen palpable. X rays revealed a mediastinal tumour and a stricture at the 7–9th dorsal vertebræ. Œsophagoscopy showed an extrinsic stricture 31 cm. from the teeth. His teeth were removed and a gland sent for section. The report stated that "if it was a tumour it could only be a lymphosarcoma."

The neck was treated with fluorescein and X rays as described by Copeman, Coke and Gouldesbrough (*Brit. Med. Jour.*, August 10th, p. 233). The glands seemed to remain stationary, but the patient had only one course before his death. The œsophagus was treated with radium by means of a special applicator which enabled fully screened radon (1·2 mm. lead) to be inserted while allowing a passage for liquids during treatment. He had two applications; the first (August 28th) was 5·35 mcd. in four days and the second (Sept. 28th) 8·71 mcd. in seven days. Half a drachm

of fluorescein was given every second day by the mouth during treatment. Surface applications to the thorax: radon in lead box 1·3 mm. distanced 1 cm. Front 20 mcd. in six days, back 30 mcd. in four days, each at the rate of 1 mcd. per sq. cm. Although successive X ray reports showed that the tumour was increasing his swallowing improved rapidly, and the day before his death (Oct. 9th) he had fried fish, potatoes and bread and butter for his dinner.

Post-mortem examination, said Dr. Woods, showed two points of particular clinical interest—viz., fibrosis where the radon had been applied and desquamation of œsophageal epithelium round the position of the applicator. This seemed to be the result of a peeling dose rather than a radium burn.

The CHAIRMAN described the post-mortem findings in the case. There was, he said, a large mediastinal tumour which had caused the stricture of the œsophagus by external pressure. There was no intrinsic tumour of the œsophagus. The tumour had infiltrated the right lung in a massive way, resulting in its collapse. The right pleural cavity was filled with fluid. A large tumour mass was found in the region of the head of the pancreas, and another large mass about the size of a fœtal head involved the left kidney. The liver, spleen and suprarenals were free from tumour nodules. The tumour was a lymphosarcoma. Sections cut from the site of the radium application showed fibrosis and retrograde changes in the tumour.

A discussion followed.

Dr. WOODS, in his reply, said he thought that possibly the fibrotic changes in the tumour could be attributed to the radium. All through the radium treatment the patient was getting fluorescein at the same time, but whether this had any effect on the efficacy of the radium treatment, it was not possible to say.—The CHAIRMAN, in answer to questions, said he believed that the primary growth was in the mediastinum. The spleen did not show any cyanotic induration. He thought the fibrosis which had occurred was the result of the radium treatment.

Dr. A. R. PARSONS described cases of cancer of the stomach and duodenum, and Dr. A. B. CLERY demonstrated a specimen from a case of cerebral hæmorrhage.

ST. ASAPH JOINT HOSPITAL.—A new joint hospital for six districts which has been erected at a cost of £11,000, was opened last week at St. Asaph. During the proceedings it was stated that the temporary hospital had been well supported and was "killing the old Welsh prejudice against hospital treatment."

MEDICAL WOMEN'S FEDERATION.—At the autumn council meeting, held in Edinburgh from Oct. 31st to Nov. 2nd, a scheme for a national maternity service, drawn up by a special committee, was accepted after discussion and slight amendment. The dismissal of women from their medical work on marriage was discussed and the opinion was expressed in a resolution "that marriage should not constitute a bar to the appointment of a woman to any medical post, nor should it be a cause for the termination of her contract. Her ability to carry out such contract should be the only deciding factor." The inadequate salaries of the medical women in the employment of the post-office were discussed, and it was reported that the Postmaster-General had consented to receive a joint deputation of the Federation and the British Medical Association. The differentiation made in the salary paid to the woman deputy commissioner under the Board of Control for Scotland was also brought to the notice of the council; the work done by all the deputy commissioners is similar in every respect, yet the woman's maximum salary is considerably less than that of the men, and this maximum was reached by her in 1919. Representations in 1922 and in 1924 without result are to be repeated. Three new committees were appointed—viz.: (1) a standing committee on national health insurance; (2) a committee for the promotion of an improved women's health service for India; (3) a committee to deal with dysmenorrhœa amongst factory workers. A resolution was passed requesting the British Medical Association to consider the desirability of a common approach to the General Medical Council to suggest the appointment of an additional direct representative for England.

Reviews and Notices of Books.

SIR CLIFFORD ALLBUTT: A MEMOIR.

The Right Honourable Sir Thomas Clifford Allbutt, K.C.B. A Memoir by Sir HUMPHRY DAVY ROLLESTON, Bt., G.C.V.O., K.C.B. London: Macmillan and Co. 1929. Pp. 314. 15*s*.

THIS must have been a difficult book to write, for it is a fully dated commentary upon the very varied life-work of a man who kept but few letters and no diary, and who left behind him no personal reminiscences. But Sir Humphry Rolleston had the great qualities for meeting the situation of being closely associated with Allbutt in this most prominent accomplishment and of being also an intimate personal friend. Further, though Allbutt preserved on his side so little correspondence, those to whom he wrote in many instances treasured his letters and their contents have been of great assistance in a study of the man, displaying him as one with multifarious and great interests to the advancement of which he gave unsparingly splendid gifts of character and learning.

The life of Allbutt is here considered in three sections: the first (1836–61) covers early life and education, and reminds us of the valuable post-graduate training which Allbutt underwent after securing classical and science honours at Cambridge and before he decided to start practice in Leeds; the second (1861–92) covers 28 years as a consultant in Leeds and three years in London as a Commissioner in Lunacy; the third tells the story of his 25 years' tenure of the position of Regius Professor of Physic at Cambridge. The famous "System of Medicine" having been projected in 1893, this last division of the book contains a description of the troubles of editorship which Allbutt faced and dispersed by his industry and orderly methods as well as by his erudition. To this period also belongs some of his best-known literary work, while throughout the whole quarter of a century he was the acknowledged guide of his calling in medical politics. Nearly two-thirds of the book is occupied with brief accounts of Allbutt's intervention in matters of the first importance, literary, scientific, and practical, as they concerned the profession of medicine, and hardly a page in Sir Humphry's closely written narrative is without some reference, date, story, or letter serving to remind us of the personality and influence of the great physician.

The book will find a large audience awaiting it.

EYE, EAR, NOSE AND THROAT.

A Text-book of Eye, Ear, Nose and Throat Nursing. By ABBY-HELEN DENISON, R.N., Graduate of Massachusetts General Hospital Training School for Nurses, Boston, Mass. London: Macmillan and Co., Ltd. 1929. Pp. 295. 12*s*. 6*d*.

THIS little book contains three sections, devoted respectively to the eye, the ear, and the nose and throat. Each section begins with a succinct but readable description of the anatomy and physiology of the organs concerned, followed by a short list of drugs and solutions with notes of the purposes for which they are employed. Next comes an account of appliances and nursing treatments, such as various forms of eye pads and bandages, and the methods of irrigating the ears, and this section is followed by a description of the usual operations, the preparation for them, and the complications which must be looked for, and, finally, the nurse's miscellaneous duties in the out-patient department. Much of this part of the book is in tabular form and, being in conformity with the routine of a particular hospital, is not necessarily directly applicable to others; but it will be found valuable for purposes of reference by all nurses undertaking this special work. We are astonished to see flax-seed poultices given as the regular treatment of aural furunculosis; and, in the chapter on drugs used in nose and throat diseases, "ephedrine

1 oz.," is obviously intended for a solution of ephedrine, the strength of which is not mentioned. Lack of accuracy in a book for nurses always has its dangers, though it is of less moment in a later section on mouth-washes, where the direction is given to dissolve one tablet of potassium chlorate in a quarter of a glass of water, the size of the tablet not being specified. The book closes with a sympathetic description of the function of the social service worker. It is provided with a good index, and may be recommended for the purposes at which it aims.

Your Nose, Throat, and Ears; Their Care and Health. By L. W. OAKS, M.D., and H. G. MERRILL, M.D. London and New York: D. Appleton and Co. 1929. Pp. 167. 5*s*.

THIS is, we are glad to note, in no sense a manual of home treatment; it is indeed but little concerned with the question of treatment, but aims at giving members of the public a general idea of the functions of the nose, throat, and ears, and of the ills to which they are liable. The authors have done their work well. They have laid stress, without being unduly alarming, on the dangerous possibilities of such conditions as continued hoarseness, and they have described the commoner affections with a fair degree of accuracy in untechnical language. We would have liked to see an account of the troubles which arise in nose and ears from bathing, and of the precautions which may be taken to prevent them, and we do not agree that spontaneous perforation of the drum produces the stellate appearance figured on Plate VII., or that such a perforation will probably remain permanent. But the authors have succeeded in avoiding most of the pitfalls which beset the path of those who would write a book on technical matters to enlighten the members of the general public.

BIOCHEMISTRY.

A Text-book of Biochemistry for Students of Medicine and Science. Second edition. By A. T. CAMERON, M.A., D.Sc. Edin., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba; Associate in Biochemistry, Winnipeg General Hospital London: J. and A. Churchill. 1929. Pp. 482. 15*s*.

THERE is very little change in the second edition of this book, but certain errors have been corrected and the whole has been brought up to date. It deserves the serious attention of teachers of physiology and biochemistry, since it was not only amongst the first of the general text-books of biochemistry appearing in the English language, but is now one of the most popular. The author has treated the subject in a broad-minded way, which makes the book useful to the physiologist who wishes to study biochemistry, and to the qualified man or medical student who wishes to apply to medicine and pathology biochemical knowledge. The keenest critic would have to admit that even on highly debatable questions the statements here expressed are fair and accurate, so that the work is likely to retain a permanent place in the literature of biochemistry.

AIDS TO DERMATOLOGY AND VENEREAL DISEASES.

By R. M. B. MACKENNA, M.A., M.B., B.Ch. Camb., M.R.C.P. Lond., Hon. Assistant Dermatologist, Liverpool Cancer and Skin Hospital. London: Baillière, Tindall and Cox. 1929. Pp. 236. 3*s*. 6*d*.

IN this little book the author, who is the son of Dr. R. W. MacKenna, displays the happy knack of combining the synoptic with the discursive methods. The result is a readable and interesting review, which covers the subjects specified sufficiently both for examination purposes and the daily exigencies of general practice. Some valuable sections on X ray and radium therapy are included, while the chapter on purpura presents an original classification based (1) on defects of the capillary walls, (2) deficiency of the blood-platelets, and (3) defects of the blood-coagulation complex—a welcome departure from such ill-defined entities as purpura simplex and purpura hæmorrhagica. There are a few useful diagrams. Fig. 1 illustrates the structure of the normal skin, but omits to label, although it depicts, the basal or germ-cell layer. Dermatologists may not agree with the suggestion on p. 9 that a starch poultice should be left in situ for as long as 12 hours. The book provides a useful compilation.

THE PREVENTION OF DISEASE IN THE INDIVIDUAL. Third edition. By KENELM WINSLOW, M.D., B.A.S., Attending Physician to the Seattle City Hospital and King County Hospital, Washington. London and Philadelphia: W. B. Saunders Company. 1929. Pp. 431. 12*s*. 6*d*.

FIRST published in America in 1916 this book has become deservedly popular, providing as it does a detailed practical guide for the layman capable of understanding simple scientific terms. The information given on matters of personal hygiene relating to diet and exercise is excellent. In the section dealing with alcohol the author takes a sound commonsense view of the whole position; he looks with disfavour upon bootleg liquor, one part of which is said to cause the same degree of drunkenness as ten parts of pre-prohibition liquor. The classical delirium tremens patient has disappeared from American hospitals; it is doubtful if drinkers of bootleg manufacture survive to develop the chronic effects of alcoholism. Germ diseases are well described. Considerable attention is given to tropical diseases, such as malaria, yellow fever, dengue, and cholera, as well as those with which we are more familiar in this country. The chapter devoted to the prevention of diseases of middle age is well written and will be useful, not merely to the middle-aged, but to those called upon to advise them on their methods of life. The chapter on the prevention of cancer is an excellent one which the layman will readily understand. The volume may be recommended to all who find themselves called upon to lecture or speak to the public upon the preservation of health and the prevention of disease.

GYNÆCOLOGIC TECHNIC.

By THOMAS H. CHERRY, M.D., F.A.C.S., Professor of Gynecology, New York Post-Graduate Medical School and Hospital. Philadelphia: F. A. Davis Company. 1929. Pp. 678. £1 13*s*. 6*d*.

THIS book is intended for the practitioner only and deals with the technical rather than the theoretical aspects of gynæcology. Provided that books of this kind are used by those with a sound knowledge of the basic principles of the subject their value may be great, but there is always a danger that readers may forget that technical dexterity cannot compensate for the absence of knowledge of the pathology of the disease it is proposed to treat. Great pains have been taken by the authors to make the book clear and simple. The description of operations has been restricted to one standard method which is given in detail. The work is lavishly illustrated by one of the best series of illustrations in the literature; these have been drawn by the author himself and accentuate the exact points which he wishes to make clear. An operation for complete prolapse is described which entails vaginal hysterectomy; the subsequent closure of the vaginal vault, it is claimed, tightens up the cardinal ligaments. It is difficult to imagine what happens to the ureters during the process. Wertheim's hystero-vaginectomy for carcinoma of the cervix is not described; radium seems to have completely replaced the radical operation in the treatment of this disease in America. The use of electricity in gynæcology is fully discussed and this section of the book should be consulted by British gynæcologists who seem to have neglected somewhat this weapon. An unfortunate misprint occurs in a table giving the dosage of stovaine for spinal anæsthesia at different

ages; if this error were not detected the reader might be led to give ten times the correct dose to children.

This work will be read with interest and profit by those called upon to operate on the female genital tract.

HÆMATOLOGY.

Einführung in die Hämatologie. By Dr. A. VON DOMARUS, Direktor der Medizin, Abteilung des Städtischen Krankenhauses Berlin-Weissensee. Leipzig: Georg Thieme. 1929. Pp. 185. M.14.

THIS book begins with a good account in plain German of the methods used in the study of hæmatology. The three plates showing the blood-cells, normal and abnormal, are well reproduced. We note that the author favours the use of actual numbers as well as percentages of the different types of white cells. As an example of the error associated with the method more commonly used in this country he points out that if the number of white cells in a case of polymorph leucopenia is expressed in percentages one is given the impression that there is a lymphocytosis, whereas in reality the lymphocytes may be normal in number. In the pernicious anæmia section more prominence might have been given to the liver treatment and to the changes this brings about in the blood picture.

The book contains much information in a small compass.

SEX AND DISEASE.

By ROBERT V. STORER, M.R.C.S. Eng., L.R.C.P. Lond. London: Butterworth and Co. (Australia), Ltd. 1929. Pp. 131. 8*s*. 6*d*.

THE main purpose of this small volume is to assist the layman in the solution of sex problems and to explain the nature and dangers of venereal diseases. The subject is presented in a clear and concise manner. In discussing the pathological effects of these diseases the author has avoided the error of magnifying the dangers and thus of terrifying the nervous and worried reader. To those who are suffering from syphilis or gonorrhœa the volume conveys much sound information; the necessity for regular skilled treatment is stressed, and the results achieved by modern methods and remedies presented in an encouraging way. Dr. Storer lays stress upon the advisability of undergoing thorough tests for cure in gonorrhœa. A brief description is included of Australian public health measures for the prevention and treatment of venereal diseases.

GREEK MEDICINE.

By ARTHUR J. BROCK, M.D. London: J. M. Dent and Sons, Ltd; New York: E. P. Dutton and Co., Inc. 1929. Pp. 256. 5*s*.

THIS selection, illustrative of medical writers from Hippocrates to Galen, forms the volume on Greek medicine in the Library of Greek Thought, which is now being issued under the editorship of Dr. Ernest Barker. It is appropriately dedicated to the memory of Dr. Francis Adams of Banchory. The author modestly disclaims any pretentions to finished Greek scholarship, but tells us that he has been a student of Greek since boyhood, and that for the past 20 years he has been reading Greek medicine in the original tongue. All the extracts included here, except those from Aristotle, are his own translations. The first 34 pages of introduction are explanatory, and deal with Greek medicine before Hippocrates, the empiricists, Greek medicine in Rome, methodism, pneumatists and eclectics, Rufus of Ephesus, and Galen. Dr. Brock draws an interesting parallel between Galen and St. Paul. The Hippocratic selections include *inter alia* his views on such surgical conditions as dislocation of the hip and club-foot. These extracts are followed by an account by Thucydides of the pestilence at Athens, which seems to have been more like typhus fever than anything else. Next come short excerpts from Plato and Aristotle, while notes by Rufus of Ephesus on medical interrogation of patients and on anatomical nomenclature end the first part. The rest of the book is devoted to Galen, while a short appendix contains a description of the plague at Syracuse among the Carthaginians, 397 B.C., by Diodorus Siculus, and a discourse by Aetius of Amida, sixth century, A.D., on aneurysms.

The whole forms a fascinating volume and will be welcomed by medical men with an appreciation of ancient culture.

CLINICAL LABORATORY METHODS.

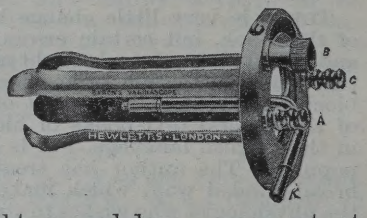
Third edition. By RUSSELL LANDRAM HADEN, M.D., Professor of Experimental Medicine, University of Kansas School of Medicine. London: Henry Kimpton. 1929. Pp. 317. 21*s*.

OF text-books of clinical pathology and laboratory methods there is nowadays no end. The present work stands well in the front flight and the appearance of a third edition will be welcomed by those who already know it. This book was designed largely for the American practitioner who apparently is able to spend more of his time in his "office" laboratory than his British colleague can afford to do. In this country its appeal will be mainly to the pathologist working single-handed in a small laboratory. The author confines himself strictly to procedures of proven practical value and for each of these describes one technique only. The notes given are lucid and concise and include accounts of certain techniques such as that for the determination of indican in the blood by the method of C. H. Andrews, which have up to the present not yet made their appearance in many text-books.

New Inventions.

THE VAGINOSCOPE.

UNDER this title I have introduced an instrument (here illustrated in the open position) which remedies many defects noted in specula hitherto in use. The vaginoscope, in its closed form, is of small cross section, and can therefore be introduced painlessly, the patient being in either the dorsal or lateral position. Illumination is provided by a bulb attached to a battery and flex by a long thin bent tube running in a groove along the lowest blade, the whole being removable for sterilising the instrument itself. A slight up-and-down movement at K makes or breaks electrical contact. Excellent visibility is thus obtained of the vaginal walls, the cervix, and fornices. By loosening screw-knob (B), and then placing the thumb on peg (A) and the forefinger on (B) a single grip effects a simultaneous outward movement of the four blades resulting in a quick dilatation of the vagina. Sufficient dilatation having been obtained the screw-knob is tightened, thus locking the instrument. Additional expansion is produced by the bulbous extremity of the instrument, which not only acts as a retaining medium, but also enlarges the field of vision at the inner end of the vagina. No assistant is required to hold the instrument in place, and the hands of the examiner are left free to use additional instruments, &c. On completion of the examination for diagnostic or therapeutic purposes the screw-knob (B) is loosened; then gripping (B) and (C), a single movement suffices to close the instrument, which is then easily removable in its partially closed form. The instrument is a compact, self-retaining and self-illuminated speculum.



Messrs. C. J. Hewlett and Son, Ltd., 35–42, Charlotte-street, London, E.C.2, are the makers.

EDWARD BARON, M.B., Ch.B. Leeds.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 16, 1929.

THE SIGNIFICANCE OF VISCEROPTOSIS.

ALTHOUGH the group of symptoms associated with a dropping of abdominal organs was lucidly described three centuries ago by RICHARD BURTON in "The Anatomy of Melancholy," their cause still remains a matter of speculation, and our knowledge is little more than a commentary on associated conditions. No one has published statistics of the average duration of life in human beings with displaced stomachs and colons; or of their comparative effectiveness as members of society[1]; until this has been done we have no right to dogmatise. But much has been written on the subject, and we are indebted to Dr. HARRY BEDINGFIELD for a scholarly summary in a thesis presented for the degree of M.D. which has been appearing in the last two issues of the *Quarterly Journal of Medicine*. In this thesis the author has reviewed more than 640 papers bearing on the chronic invalidism associated with visceroptosis. Before the introduction of the opaque meal at the end of last century the position of the abdominal viscera during life was inferred from the lessons of post-mortem dissections and observations made in laparotomies. The introduction of formalin as a hardening agent illumined the topography of the abdomen, but the light was obscured by the medium through which it came. We do not know, for instance, how long in the daily life of any person the pylorus lies in the "transpyloric plane" of Addison. With the exception of its proximal and distal attachments—the duodeno-jejunal junction and the iliac colon—the bowel certainly appears to be a mobile and wandering inmate of the abdomen, and this fact, first shown by radiology, has given rise to a new conception of visceroptosis. Until the normal is defined it is impossible to detect the abnormal. There is as yet no consensus as to the normal limits of visceral mobility, while it is increasingly recognised that function is not necessarily impaired by abnormal position. It may be recalled that in "The Ship that Found Herself" the engines which had been built to work on clean steam in an upright position were able to carry on while lying almost horizontal and consuming a mixture of oil and dirty water. Radiology has shown the alimentary canal to possess something of the same adaptability. The stomach can empty itself in the usual time and without functional disturbance, even when the skiagram shows a high degree of dropping (CONRAN and MARXER), and the same holds for other parts of the alimentary canal. Herein lies the riddle of chronic intestinal invalidism. Though the radiograms in two cases may be almost identical, in one case there is pain and disturbance of function, while in the other there is none. Symptoms associated with enteroptosis may disappear without change visible in the radiogram.

Evidently in visceroptosis some other factor is necessary before the comfort of the individual is affected, but whether this factor is to be sought in a local morbid condition or in a bodily diathesis remains undetermined. Before the advent of radiology the local condition was regarded as holding the key to the problem, but this is not the modern view. Theories galore have been brought forward to explain what may be called the primary factor in the production of symptoms in chronic intestinal invalidism. BEDINGFIELD mentions over a score, several of which call for special comment. GLÉNARD, whose name is in France associated with the condition, propounded the mechanical theory in 1885, but modified it later as his clinical studies led him to suppose that the liver played a predominant part. In hepatism, as he called it, there is invoked an inadequacy of the liver cells, congenital or acquired, which may remain latent until called into activity by some factor such as infection or trauma, when the liver fails in its detoxicating action, and a poisoning of the bowel ensues, resulting finally in stasis. ARBUTHNOT LANE, who also regards stasis as the most potent cause of symptoms, has a different theory. In 1885 he noticed a band at the junction of the iliac with the pelvic colon which might, by angulation of the bowel, give rise to obstipation; the overloaded bowel, with its tendency to kink, produces a back-working which, by a series of analogous changes, would finally affect even the stomach; bands supporting the sagging bowel contract in their turn, producing further angulation and stasis, and finally an intestinal toxæmia is produced. GOLDTHWAIT, on the other hand, regards visceroptosis as due to bodily configuration, nervous symptoms being brought about by dragging on the solar plexus. A fourth school debits the causation of symptoms to a localised pathological condition, such as constipation, entero-colitis, appendicitis, adhesions, excessive mobility or fixation of the cæcum. Physiologists have commented on the lack of harmony in the interaction between the different parts of the autonomic nervous system, producing symptoms directly or through the liberation of chemical stimuli. None of these theories in its entirety has stood the test of time, and the treatment founded upon them, whether medical or surgical, has led to disappointment. Each new line of therapy has given good results in selected cases, and the impartial observer is forced to the conclusion that the causa causans still remains to be discovered.

Between mental reactions and the functional condition of the alimentary canal a relationship has long been traced, and this assumption has been amply confirmed by radiologists. One example is A. E. BARCLAY'S well-known observation of the sudden dropping of the greater curvature of the stomach following a shock due to the slamming of a door. The most casual student of the literature of chronic abdominal invalidism must be struck with the frequent reference to mental and nervous disabilities, and the frequent resort to some congenital explanation of the symptoms. Thus we have congenital inadequacy of the liver cells, congenital dislocation of the viscera, congenital malformation of the thorax leading to a low position of the abdominal organs, failure of normal development leading to defective visceral fixation, and, in our own day, congenital bands and membranes. For some time also it has been recognised, notably by H. C. CAMERON, that there exists in children a condition symptomatically analogous in its symptoms to that found in adults. Consideration of these three factors has produced yet another theory to the effect, stated in its most general form, that in visceroptosis some departure from normal mental functioning is fairly regularly associated with the departure from normal

[1] See a discussion at the thirty-second annual meeting of the American Gastro-Enterological Association, Amer. Jour. of Surg., October, 1929, p. 470.

physical functioning. An attempt has been made to associate the nervous diathesis with a particular physical configuration, but the organic structure is so modified and altered in the course of time that rigid lines of demarcation are difficult to define, one group merging into another, and leaving a large unclassifiable borderland. Indeed it is doubtful if the bodily constitution remains the same throughout life. The inherited factors are continually being played upon by the stimuli of environment, and the individual at any moment is the resultant of these forces. Constitutional inadequacy may thus be regarded as offering the most plausible explanation of the chronic abdominal invalid. By this is meant a state of physical and mental make-up, congenital and possibly inherited, which handicaps the individual in his adjustment to the various environmental stresses. Such stresses as infection, a surgical operation, a love disappointment, the loss of a parent or friend, these are all shocks to which the constitutionally inadequate cannot react in a normal manner. A particularly potent factor is a low-grade infection, whether focal or generalised, continuous over a long time, as in tuberculosis. According to the degree of mental handicap, the individual may either triumph over, accept, or become the victim of his physical inefficiency. While this view offers a good working hypothesis, and is one which fits in most closely with observed facts, we may still feel that the whole truth has not yet been told. An obvious criticism is that we cannot adequately explain the greater incidence of abdominal invalidism in women. Two explanations for this are suggested: that girls do not (or did not) lead as athletic a life as boys, and that men have no strain corresponding to that produced in woman by menstruation and its disorders. Neither is very convincing, and, of course, severe cases are met with in males.

PUBLIC HEALTH IN LOCAL LEGISLATION.

THE official index has just been published of the Local and Private Acts passed in the final session of the last Parliament—i.e., between November, 1928, and May, 1929.[1] In this period there were 96 Local and Private, as compared with 39 Public General, Acts. Though too voluminous and discursive for ordinary study, this local legislation contains, as usual, an experiment or two in public health and local administration which, if successful on a small scale, may some day be applied to the whole country.

We find, for instance, the Chester Corporation devising what may prove a valuable precedent for dealing with health conditions on house-boats. The Corporation is given power to prohibit the mooring of these vessels except at approved places, or unless suitable and sufficient sanitary conveniences exist or are provided, on the adjoining land. The Nottingham Corporation Act ingeniously applies to house-boats the "Tents and Vans" section of the Public Health Act of 1925. Thus by-laws at Nottingham may deal with the registration of house-boats, the prevention of river pollution therefrom by "sewage or any other offensive or injurious matters whether solid or fluid," and "the provision of such house-boats with such sanitary appliances as the Corporation may require." Elsewhere there are measures of flood prevention. The London County Council undertakes the duty of supervising and inspecting the banks of the Thames and overseeing the execution of such works as may perhaps prevent the recurrence of recent disasters. There is an echo of the latter in the Westminster City (Millbank) Improvement Act. Housing produces what seems a new clause in the Chester Act for "the provision of fixed baths in such classes of new dwelling-houses as may be prescribed." Tenants at Smethwick will have the advantage that the Corporation can put in pipes, wires and fittings, and can supply gas and electricity in houses where the occupier has asked for, and the owner has refused to give, these facilities. The amenities of town life are protected at Llanelly and Smethwick, where structural alterations can be ordered on complaint by the medical officer that smoke, gas, or vapour from outbuildings or washhouse chimneys causes a nuisance to neighbours. At Guildford, if buildings are being constructed or reconstructed, or if chimneys over 45 feet high are being erected, by-laws may require the deposit of plans showing the elevations and materials. If the proposed structure is likely to disfigure the neighbourhood, the plans are referred to a Standing Advisory Committee of three, consisting of a selected architect, surveyor, and justice of the peace, which can veto the proposal. This recalls a clause in the Bath Corporation Act of 1925. Another fresh precedent is the extended power at Chester to control the erection and painting of facia-boards, signboards, and signs.

In legislation directly concerned with health there has been a dearth of novelties lately. Blackburn, Bognor, Llanelly, and Oldbury, as well as Chester and Smethwick, obtained fresh public health powers in the past year, but most of the provisions are "common form." The control of ice-cream or potted food manufacture, the registration of ice-cream vendors and their premises, the restriction on the carrying on of business by infected persons, compensation to persons thus put out of employment, compulsory notification by doctors of food poisoning, the power to close Sunday schools during epidemics, the parent's duty to notify the head teacher of a child's infection, the extended definition of infectious disease, the obligation to furnish laundrymen's names—all these are nowadays as familiar as the provisions for dealing with unsound food, or for the cleansing of filthy premises. We noted last year in the Sheffield, Rotherham, and London County Council Acts the power to remove to hospital on a medical officer's written certificate and a magistrate's order persons who are either (*a*) aged, infirm, or physically incapacitated, and living in insanitary conditions; or (*b*) suffering from any grave chronic disease, if they are unable to look after themselves properly, or are not being looked after by others. This clause appears this year in the Blackburn and Smethwick Acts. So does the useful provision which allows the medical officer to enter (on a justice's warrant) any premises where a case of dangerous infectious disease is suspected. The two usual safeguards are added that entry must be made only between 7 A.M. and 10 P.M., and that the medical officer is not to examine anyone who is already under the treatment of a medical practitioner, except with the latter's consent. In this last proviso the Smethwick Act uses the words "registered medical practitioner," while the Blackburn Act merely says "medical practitioner." Does this mean that at Blackburn treatment by an unqualified person could prevent the medical officer from exercising his statutory power of entry and examination?

Some of the powers given to local authorities by Local Act seem trivial. It looks odd that a municipal corporation, for instance, should require the special authority of Parliament to charge anyone a fee for

[1] Index to the Local and Private Acts. H.M. Stationery Office. 1*s*. 6*d*.

the use of an automatic weighing machine at public baths. The explanation lies in the restraining influence of the doctrine of ultra vires. Civic enterprise, however, triumphs over difficulties and gives a lead to the nation. Thus in many towns tests for motor drivers are now compulsory; so also is insurance by hackney carriage proprietors. Magistrates in London and elsewhere have protested the law's impotence to punish "joy-riding" (the practice of temporarily making off with someone else's car without his permission) till at length the Government has drafted a Bill on the subject. But Blackburn, Chester, and Smethwick had already made this practice a punishable offence. As with police matters, so with hygiene, Parliament seldom puts into a general Public Health Act any enabling clause which has not already appeared in local legislation.

CARDIAC STIMULANTS.

CLINICIANS and pharmacologists always seem irreconcilable about the so-called cardiac stimulants, and doubtless some of their difficulties arise from the varying nature of "heart failure." Circulatory collapse may be attributable to a breakdown of the heart muscle, of the arterioles or capillaries, or of the vasomotor centre. Thus it is that brandy, for example, by reflex stimulation of the medullary centres or by vaso-dilatation of the peripheral arterioles may improve the action of a labouring heart, though as a direct stimulant of the heart muscle it has no value. Similarly, strychnine has little or no direct action upon the heart muscle—Prof. J. A. GUNN [1] does not think it has ever saved a life—but it has an action on the central nervous system and the vasomotor centre, and in this sense may perhaps be called a circulatory stimulant. Pituitrin is another drug which has no action on the heart itself but it is to be regarded as truly a stimulant, because it causes a powerful contraction of the arterioles and probably of the capillaries. The claims made for camphor and its numerous compounds rest on a different foundation, for it is often said that they have a direct effect upon heart muscle. For this reason they have been very widely used in heart failure, especially on the Continent.

During the last sixty years Prof. P. TRENDELENBURG,[2] of Berlin, and his assistants have been studying the activity of some of these substances in experimental conditions of cardiac and vascular insufficiency. Like other workers he has found that their action is only to be detected in a failing heart, since the optimal activity of a normal heart apparently cannot be improved by any of the substances which he has tested. The effects of digitalis and strophanthin, for instance, can only be seen in the damaged heart and TRENDELENBURG draws attention to the contrary actions of adrenalin and ephedrine in health and disease. With a healthy heart these drugs constrict the arterioles so strongly, and the peripheral resistance is thereby so greatly raised, that the cardiac output per minute actually falls; the glucosides of digitalis and strophanthus cause far less vaso-constriction and thus produce less resistance to the heart's action. With an "insufficient" heart, however, adrenalin can directly stimulate activity so that the volume pumped through in a minute increases and the pressure in the arterioles falls. When the heart was experimentally damaged either by gradual exhaustion or by suitable poison—e.g., histamine or oxidised salvarsan—TRENDELENBURG was unable to show that, in therapeutic doses, the preparations containing camphor which he examined were of any use in reducing cardiac insufficiency; some even increased it. But when heart failure was produced experimentally by asphyxia from paralysis of the respiratory centre, these camphor compounds were able to restore the respiration and in course of time they regularly overcame even the severest cardiac insufficiency. This was especially obvious when the respiratory centre was paralysed by morphia, and less so when chloral hydrate was used. A purely "vascular" failure cannot easily be produced in the laboratory, but in this type of insufficiency the camphor derivatives again seemed to be entirely inactive; while adrenalin and ephedrine, as would be expected, were able to restore the circulation to normal conditions. Digitalis and strophanthus were only slightly active.

Purely arteriole or capillary failure must be uncommon clinically, because circulatory failure usually comes from a combination of vascular and cardiac factors. In such combined failure a cardiac stimulant should both improve the heart's action and constrict the peripheral vessels. Obviously the cardiac stimulation must not be less effective than the raising of the resistance from peripheral constriction, for if the blood pressure is raised more than the heart is stimulated the circulation will be hindered rather than assisted. This may sometimes happen when adrenalin is used—since the associated cardiac improvement may not be great enough to overcome the increased blood pressure—and it must be a constant result of injecting camphor compounds if it is true that they do nothing to remove muscular failure of the heart and only have the effect of increasing the resistance against which it is acting. TRENDELENBURG'S research suggests that camphor preparations are actually harmful in heart failure. At best they are inactive except where the conditions are such that by stimulating the respiratory centre we can remove the cause of failure—that is to say, when we are faced with lack of oxygen or excess of CO_2.

[1] See THE LANCET, 1928, ii., 758.
[2] Med. Klin., 1929, xxv., 1573.

FOR VALOUR.

THE armistice was signed ten years ago and the entrance upon a second decade was marked by the action of the Prince of Wales in presiding over a dinner to V.C.'s given in the Royal Gallery of the House of Lords on Saturday in last week. The dinner was organised by the British Legion and 321 of the holders of the Victoria Cross, representing all parts of the British Empire and all levels of social rank, met, having the common distinction of proven valour and the common desire to assist the ex-Service men in need, and to help the widows and dependents of those who gave their lives in the Great War. The Order was instituted at the close of the Crimean War, and there are alive some 460 holders of the Victoria Cross. Of these 321 were present at the dinner, a high proportion indeed when the difficulties of travel over the distances of the Empire are remembered, and the possible age and infirmity of some of the veteran wearers of, in the graceful words of the Prince of Wales, this Most Enviable Order. Enrolled in the Order are 14 medical men, of whom the following were present at the dinner: Major W. B. Allen, R.A.M.C., Colonel J. Crimmin, I.M.S., Captain B. Hutcheson, Can. A.M.C., Colonel E. T. Inkson, R.A.M.C., Lieut.-Colonel F. S. Le Quesne, R.A.M.C., Major-General Sir Owen Lloyd, E.P., and Lieut.-Colonel J. H. Reynolds, R.A.M.C. Corporal J. J. Farmer, Army Hospital Corps, was also present.

Annotations.

"Ne quid nimis."

A NEW RESEARCH HOSPITAL.

A DRASTIC change in the scope and purpose of any charitable institution must have parliamentary sanction and past subscribers may be assured that this would be withheld unless the alteration was warranted by a change in the needs of the population served. The fact that an Enabling Act was passed in May of this year, allowing responsible authorities of the Mount Vernon Hospital, Northwood, to use their lands and investments for the investigation and treatment of malignant disease instead of for diseases of the chest is an indication of such a change. In recent years the establishment of sanatoriums by local authorities has so diminished the number of patients applying for admission to the hospital that its council, with the full consent of the medical staff, sought and obtained permission to turn their efforts in a new direction. A scheme of work and development, framed with the help of experts, has been generally approved and is being put into speedy effect. The council of management of the hospital on which the medical staff is represented is being assisted by an advisory committee whose duties will be to give advice on the staffing of the hospital, on medical and scientific matters, and on the forms of treatment and research to be undertaken in the hospital. The new organisation differs in many important points from that of hospitals not primarily dedicated to investigation. A whole-time director of research is to be appointed to devise and coördinate schemes of work and the appointments of the honorary staff will be subject to annual consideration in accordance with the particular object of the hospital's research into various treatments for malignant disease.

The survey of the history of this hospital and the reasons for its reconstruction, given on another page, is of more than local import. The same sequence of events might equally well have occurred in the life of any hospital designed to treat cases of infectious disease which are now for the most part being dealt with effectively in rate-supported institutions. Some will regret the change, but it may be a prototype of other changes and may point the way to the sound allotment of work between voluntary hospitals and those organised and supported by the local authorities. Routine treatment of disease by established methods can be carried out safely in any well-conducted hospital. The critical investigation of pathological processes and the assessment of the scope and limitations of methods of combating them is essentially work to be carried out in a hospital designed for the purpose. Medical students would, in an ideal state, have access to both types of hospitals, though not necessarily at the same stage of their careers. The conversion of the Mount Vernon Hospital to other purposes from those which it was intended to serve is not likely to be an isolated one.

ERROR IN DIFFERENTIAL BLOOD COUNTS.

THAT even in the most carefully prepared blood smear the white cells are far from being evenly distributed is recognised by everyone who has ever looked at such a preparation. That the various classes of white cells alter in their distribution in different portions of such a smear is well known to all who study them with any closeness. And that these facts must have a disturbing effect in a differential count of white cells is self-evident. Most workers have been content to do as best they can by the random selection of a few fields in a smear; others, following Naegeli, have tried to reduce the error by counting up to a thousand cells. Meanwhile, the laws governing distribution of the white cells in a smear have not come in for much careful consideration, and this is an omission which Curt Gyllenswärd, of Stockholm,[1] has tried to remedy. His results are reported in a very long paper which bristles with formidable calculations and should be consulted in the original by those interested. In brief, it may be said that he condemns the cover-slip method of preparation, and recommends that form in which the blood is smeared on a microscope slide by drawing a second slide along its length. In such preparations, however, the smaller cells tend to be deposited more quickly than the larger cells as the movement of the blood over the receiving slide decreases. The result of this is the formation, at the top and bottom of the slide and in the "tongue" at the end, of "zones" of lymphocytes, neutrophiles, eosinophiles, and monocytes. Counts conducted in these zones may show a relative distribution of the different classes of cells very different from that which obtains in the circulating blood. To avoid the influence of such zones Gyllenswärd recommends that in making a differential count the first and the last five millimetres of the smear should never be included, and that the count should be made on the central portion of the slide in transverse travels. If these precautions are taken he finds no advantage in including more than 300 white cells in the count.

BISMUTH IN THE TREATMENT OF SYPHILIS.

EVER since bismuth was introduced into the treatment of syphilis in 1921 it has been regarded almost universally as a valuable spirochæticidal drug. From time to time, however, a voice has been raised to question the advisability of using it in place of the older remedies, mercury and arsenic. In 1927 [2] Dr. T. Anwyl-Davies discussed the action of bismuth on the *Spirochæta pallida* and, following the conclusions of W. Kolle and his collaborators, declared that bismuth had no direct curative action on the infection but merely inhibited the disease. Kolle's experiments and Anwyl-Davies's conclusions were discussed and strongly contested by Dr. C. Levaditi and Dr. L. Fournier.[3] We publish this week and last two further papers on the subject and a report of the discussion at the Venereal Diseases Section of the British Medical Association at Manchester last July. Dr. T. M. Ling has been working at St. Thomas's Hospital with bisoxyl, a suspension in water of bismuth oxychloride and chloretone. Subcutaneous injection of this preparation does not lead to the persistent pain and swelling characteristic of many forms of bismuth, and Dr. Ling has found it extremely useful in congenital syphilis, especially in lues tarda. He suggests that the spirochæte can acquire resistance to arsenic and mercury after prolonged treatment, and that in cases of this kind bismuth, without causing any untoward symptoms, will render serologically negative a fair proportion of apparently Wassermann-fast patients. Prof. H. Ritter and Dr. C. L. Karrenberg have been working at Hamburg with intramuscular injections of bismogenol, a suspension of a bismuth compound of a highly valent oxybenzoic acid in olive oil. They have found this eminently satisfactory, and declare that it has an abortive action on the disease. A number of patients have been treated by bismuth exclusively.

The case for bismuth is strengthened by these new reports. Prof. Ritter and Dr. Karrenberg suggest that many of the objections alleged against it depend on the very inadequate knowledge that the physician has of the exact amount of bismuth metal he is giving and its fate in the body. They also point out that the criteria for a successful antisyphilitic remedy are by no means standard. The amount of bismuth varies extraordinarily in different preparations and

[1] Acta Prædiat., 1929, vol. iii., Suppl. ii.
[2] THE LANCET, 1927, i., 148, 199.
[3] Ibid., 1928, i., 692.

in different batches of the same preparation. The rapidity of absorption varies with the mode of application, the solvent or suspension medium, the concentration and the size of the particles. Some reports base their claims for success on rapid disappearance of the spirochætes, others attach more importance to the serological changes, others again to the clinical progress or alleviation of obvious symptoms. Most people seem to agree on the relative harmlessness of the most recent bismuth preparations compared with the quite grave risk attaching to arsenic and mercury administered in spirochæticidal doses. Very little is known of its mode of action. It is not a direct spirochæticide, as the amount in the blood at any time is never great. According to Dr. Svend Lomholt, the best technique for securing regular and uniform absorption is to maintain over a long period a high concentration in the body. The choice of preparation among the many which have been placed on the market and the estimation of the danger-point, are not easy matters. Dr. Lomholt placed the daily dose at about 0·5 mg. of bismuth metal per kilo of body-weight, but laid down that axiom which it is so important to remember in these days of standard treatment; every patient must be treated as an individual according to his own particular circumstances. There is a general consensus of opinion that the treatment should not be painful if the technique is good.

From the differences of experts no general conclusion can at present safely be drawn. A great deal of painstaking research is required to determine the factors which influence the absorption and retention of bismuth in the human body. Only those who have considerable experience of all the antisyphilitic remedies are justified in using any one to the exclusion of the others in any particular case. They act differently and each has its own values and dangers. The syphilologist must keep all three metals in his surgery, and continue to rely principally upon his clinical sense for the decision as to which and what proportion of each shall be administered in any case. Meanwhile he looks to the laboratory worker to furnish him with precise information about the pharmacology of his drugs.

TONSILS AND ADENOIDS IN FRANCE.

IN this country for many years the great majority of surgeons operating on the tonsils have aimed at complete removal, either with the guillotine or by dissection. If a portion of the tonsil remains the operation is considered to some extent a failure, and indeed septic trouble in old stumps is common enough to suggest that complete operation is advisable. To perform this ablation with enough certainty, and at the same time to secure efficient hæmostasis, it is necessary that the patient should be perfectly quiet. Hence general anæsthesia is almost always employed here for children, although local anæsthesia is being used more and more for adults. But practice of this kind differs widely from country to country. The *Vie Médicale* recently asked a number of laryngologists whether they removed tonsils and adenoids with or without anæsthesia; if under anæsthesia, what method was most advisable; and, finally, how they dealt with adults. The twenty-one replies[1] show that they do things differently in France. For children of tender years, below an age which varies from two to five years, the large majority of operators use no anæsthetic, either general or local; for older children the proportion is almost exactly reversed, a general anæsthetic being preferred by about two-thirds of those answering the queries. It may be noted that some of those who condemn the operation without anæsthesia do so very strongly on the grounds that it is inhumane, that it does not allow careful operation, and that it makes children so frightened and suspicious that subsequent medical examination and treatment become very difficult. These are considerations which receive full weight on this side of the Channel. For adults local anæsthesia is generally recommended, only two preferring a general anæsthetic; infiltration with a solution of novocain is the method usually employed. Ethyl chloride is the general anæsthetic employed almost exclusively, but it should be remembered that rapid operation is the rule, and that complete tonsillectomy is not usually its aim, or its result. Although this subject did not come directly into the questionaire, five operators said that they performed tonsillotomy, not tonsillectomy, in children, and two that they did so also in adults.

[1] Vie Méd., Oct. 25th, p. 1053.

LONDON SUBWAYS.

THE urgent need to inquire into the cause of London traffic fatalities, especially among children, is referred to in the annual report of the Coroner for the City of London and Southwark. Dr. Waldo points out that during recent years some third of the deaths caused by traffic fatalities have been among children and young persons. More than ten years ago, at Dr. Waldo's suggestion, the Borough Council of Southwark adopted the system of providing crossing places at certain fixed spots, the places being indicated by signs and directional notices, while school teachers were asked to explain to children the whereabouts and uses of the provision. The results were satisfactory, and many municipal councils have followed the example of Southwark. In several places in London where the channels of busy traffic decussate subterranean passages are now employed, and more subways are projected, despite the huge expense of their construction. But these subways make for public safety and must not be confused with the subways for the passage of gas and electrical mains which, in another part of his report, Dr. Waldo regards as a proper subject for Government inquiry. Referring to recent explosions and floodings, whose occurrence is in the memory of all metropolitan dwellers, he considers that the risks run by the community are great, seeing that in 1928 the explosions in electrical manhole boxes in the City numbered six, and in 1927 no less than 14, while no satisfactory scientific explanation of the accidents is forthcoming. That the London County Council is fully aware of the situation can be assumed from the announced intentions of the General Purposes Committee of the Council following upon a report of an official inquiry into the great Holborn explosion. The General Purposes Committee suggests that the Council should give effect to the recommendation of the committee of inquiry regarding the ventilation of cellars and vaults constructed under streets and connected with buildings, and that the necessary amendments to the London Buildings Act should be secured.

THE CONTRIBUTION OF MEDICINE TO INDUSTRY.

A REPRINT[1] of the Shaw lectures, delivered by Sir Thomas Legge in the early part of the year, confirms the impression then gained[2] of the unfolding of a romantic story in industrial medicine. Certain incidents are found to stand out with prominence. First comes the fact that lead poisoning in industry, whether in the potteries or in the white-lead trade, has been robbed of its terrors by the Shaw lecturer's discovery that it was caused by breathing lead dust and by his quiet insistence upon preventive regulations based on this discovery. Here is enough to earn the gratitude of his generation, and we may sympathise with him in the rejection of his advice to the Government to abolish lead poisoning from its last stronghold in the house-painting trade. Next may be placed the success achieved in freeing the woolcomber from the danger of anthrax, an old-time enemy, through the disinfection of all suspected wool as it arrives in this

[1] Thirty Years' Experience of Industrial Maladies. Royal Society of Arts. 2*s.* 6*d.*

[2] THE LANCET, 1928, i., 513.

country. To this subject Legge devoted his Milroy lectures over twenty years ago. Last we would mention the prominent part he played in establishing methods for extending compensation to industrial diseases, which have been widely copied by other nations. He stresses, as a Parliamentary debate last week stresses, the enormous preponderance of claims arising from coal-miners for conditions peculiar to their occupation; but coal-miners are not protected by the Factory Acts which Legge had to administer. Yet, notwithstanding the striking results attained by appointing medical inspectors of factories, of whom Legge became the first in 1898, no medical inspector of mines was created until two years ago, after the connexion of the Ministry of Mines with the Home Office had been severed for ten years, and then in response to representations from the Medical Advisory Committee of the Ministry. There is still work enough for a medical inspector of mines to do but, as Legge asks in his Shaw lectures, what might not have been accomplished if the appointment had been made more timely?

THE DANGERS OF CONSERVATIVE DENTISTRY.

THE evolution of dentistry from a surgical to a preservative art was hailed in the early part of this century as a triumph of science over mere operative zeal, and conservative dentistry was the aim of every conscientious practitioner. Every tooth which could by any means be made into a useful mechanical instrument was scrupulously preserved, and a mouth full of teeth whose pulp had been killed and extracted was passed as sound provided the gums seemed healthy. The application of radiological means of diagnosis to dentistry and the correlation of areas of rarification with pathological conditions, not only local but general, has destroyed the confidence of both medical and dental professions in such decisions. In America especially, according to Dr. Boyd Gardner, who is head of the dental section of the Mayo Clinic, it is now becoming recognised that the surgery of the mouth has been unduly belittled. In a lecture given in London at the Royal Dental Hospital on Nov. 4th, he explained that in his clinic the dental student is instructed when he looks into a patient's mouth not to think first what could be done in the way of a filling, but to have regard to the cause of the condition. The removal of foci of infection shown by radiological examination had been followed by the clearing up of general disorders such as ulcerative colitis and even of certain types of arthritis. Dr. Gardner urged the desirability of taking radiograms after as well as before any operative measure. At the Mayo Clinic exposures were standardised, so that work in the dark room could proceed with almost mechanical regularity.

The value of X rays in controlling treatment is now established in this country. Many dentists have installed apparatus next to their consulting-rooms and the convenience to the patient of such an arrangement is unquestionable. In a lecture delivered to the British Institute of Radiology on Nov. 4th Dr. J. F. Brailsford claims that the most helpful information will be obtained when the radiography is done by an impartial observer. In his view the radiogram and its interpretation should hold the same position to the patient's medical adviser, dental surgeon, and the patient as the auditor's report does to the directors, staff, and shareholders of a company. They should provide the doctor with independent evidence of the condition of the patient's teeth, particularly that which is likely to have a bearing upon his general health, and they should give the dental surgeon support in dealing adequately with any lesion which may be present. Dr. Brailsford calls attention to the embarrassing position of the physician called in to see a patient suffering from what he believes to be septic absorption, possibly from teeth, when he is told that they have already been examined radiographically by the dentist and reported to be sound. But surely this a question only of interpretation of radiograms; it calls not for a further X ray examination which, as Dr. Brailsford rightly contends, would involve the patient in unnecessary expense, but for inspection of the results of that already made in consultation with the dentist. Admittedly, whoever takes the radiograms, there is no longer justification for the wholesale extraction of teeth without X ray examination. Dr. Brailsford points out that a doctor's plea for such extractions is based on his experience that this treatment results in alleviation of certain symptoms, and that equal success attends the extraction of only those teeth shown by the radiogram to be septic, when the patient is spared the digestive disturbances often experienced by edentulous patients. The question resolves itself into the problem of interpretation of dental radiograms. Mistakes in interpretation in the past have been due to lack of experience or knowledge of photographic and radiographic technique, or of the anatomy and pathology of the part. A radiogram may be so poor that the most experienced cannot interpret it; on the other hand, it may be excellent and yet convey little or no information to the inexperienced observer. Dr. Brailsford showed a series of lantern slides illustrating pathological conditions of the teeth and jaws and of errors of interpretation.

The technique is now well standardised and the correlation of the radiographic appearances with clinical conditions has been more easily and firmly established than that of lesions elsewhere in the body. For example, a large series of post-mortem examinations is required before mediastinal radiograms can be properly interpreted, but extraction of a tooth is usually sufficient to show how accurate has been the diagnosis of an apical lesion. The radiographic signs are there for all to read, and it is only necessary to remind enthusiasts that symptoms do not always clear up when the tooth is removed.

SUPERSTITION.

SUPERSTITION is the seed of enlightenment, the negative aspect of an apprehension of things beyond present knowledge. It holds all the truths of science, but holds them so fast that sometimes it seems far more the enemy than the friend of progress. The shadowy borderland between folklore, religion, and psychology has been all too little explored, but will prove a most fruitful field for investigation by the psycho-ethnologists of the future. Sir Robert Armstrong-Jones selected Superstition as the subject for his presidential address to the Psychiatry Section of the Royal Society of Medicine on Tuesday last. He was able to illustrate his remarks by pointing around him, for the meeting was held in the Wellcome Historical Medical Museum where the outward and visible signs of the superstitions of past and present are collected in profusion. On the previous evening the Curator, Mr. L. W. G. Malcolm, had been speaking to the Egypt Exploration Society on Egyptian Medicine and showing how the superstitions of the Egyptians had contained the germs of much that we now recognise as scientific knowledge. Death and disease they regarded as unnatural and abnormal, due to possession, and the prescriptions in the papyri are prescriptions not for curing but for banishing, driving out, or terrifying the disease. The very multiplicity of the prescriptions is evidence of their unscientific nature, yet among them were some which contained appropriate drugs, and as these in time superseded their less successful fellows, so the magician gradually became a physician and the Egyptians groped their way towards a rational pharmacopœia. Through a jumble of magic and sorcery, said Mr. Malcolm, we can trace the foundations of Grecian scientific thought, and especially does civilisation owe to the Egyptians that favourable attitude to anatomy which resulted from the practice of mummification. From the Egyptians Sir Robert Armstrong-Jones traced the threads of superstition through Greeks, Romans, and Scandinavians to Anglo-Saxon and modern times, but

he had no kind word to say for it. Psychologically he described superstition as suggestibility, based upon fear, and he condemned it as no innocent mistake but a wilful and shameless belief contrary to the laws of nature, to experience, and to common sense. This may certainly be applied to those who cling to superstitions or conventions when there is at hand the means of rational apprehension, but when the primitive mind is striving with inadequate equipment to grasp an idea beyond its capacity to understand, superstition may be but the stepping-stone to knowledge. The curious thing about superstitions is that they so often contain, buried deeply in apparent nonsense, the germ of the truth. Kipling has illustrated this in his tale of Nicholas Culpepper who, for the most fantastic astrological reasons, set about destroying rats as a means of combating the plague and was more successful than the half-educated scientific man of his time. Quaint beliefs still hold the field in many departments of life and medicine where knowledge has yet failed to give full illumination. We shall do better than our fathers if we investigate them with sympathetic interest, rather than despising them as foolish or harrying them as evil. Explored with intelligence they are apt to yield, as several courageous investigators have shown, an unexpected treasure of new understanding.

INFECTIOUSNESS OF TUBERCULOSIS IN CHILDREN.

WHILE the view that tuberculosis is essentially an infectious disorder is gaining ground it is generally held that only open cases of tuberculosis, with tubercle bacilli in sputum or excreta, are a danger to their associates. In children it is so difficult to obtain sputum for examination that the question of individual infectivity is a difficult one to settle. Dr. Vlademar Poulsen, of Copenhagen, has recently investigated[1] 67 children, ranging from 2 months to 8 years of age who gave a positive tuberculin reaction. His method of obtaining sputum was that first introduced by Meunier in 1898, and revived at the present day by P. F. Armand-Delille and his pupils, which consists in washing out the fasting stomach in the morning with 200–300 c.cm. of sterile water, centrifuging the result and staining the deposit for tubercle bacilli after Ziehl-Neelsen. Another portion of the sediment may be inoculated on Petroff's medium or injected into a guinea-pig if further confirmation is desired. In this way 26 out of 67 children were found to have tubercle bacilli in the wash-out containing all the sputum swallowed overnight. The age distribution of these cases with positive findings was of interest; every one of 14 cases under 1 year of age gave a positive result, a finding in keeping with the generalised nature of tuberculosis at this early period of life. In older children positive results were obtained less frequently; over 3 years of age only two children had tubercle bacilli in the wash-out, of whom one had phthisis with cavitation and the other tuberculous pleurisy. The cases in Dr. Poulsen's series of tuberculous meningitis were interesting because, as he points out, meningitis is rarely the sole localisation of tuberculosis, miliary disease in the lungs being, as a rule, present also. Out of six cases of meningitis in the series he was able to show that three were excreting tubercle bacilli. From these figures he argues the need for isolation of certain tuberculin-positive children according to their age and condition. All children under 1 year of age with a positive tuberculin reaction he regards as infectious, whether definite physical signs of disease can be found or not. Between 1 and 3 years of age, in most cases, such children are probably non-infectious unless they have meningitis or definite pulmonary localisation; while above this age it is, he thinks, safe for tuberculin-positive children to mix with others, provided neither pulmonary tuberculosis nor pleurisy is present. Even if the need for strict isolation is not generally admitted, Dr. Poulsen has done a useful service in calling attention to a method of obtaining proof of the presence of tubercle bacilli in the sputum of children. His lavage method warrants a trial in this country.

[1] Jahrb. f. Kinderh., 1929, cxxv., 206.

MEDICAL WOMEN AT V.D. CLINICS.

A FEW weeks ago a candidate for a post at a venereal diseases clinic in Scotland was rejected on the ground of sex, as apparently it had been decided that a woman *qua* woman could not hold such a post there. The incident naturally led to some discussion at the Medical Women's Federation, when the council was satisfied of the existence of a definite desire on the part of many women patients to be treated by practitioners of their own sex. In England and Wales, although there is no official ruling to prevent the appointment of women, the number who hold office at V.D. treatment centres seems to be comparatively small. At the close of 1928, according to the report of the chief medical officer of the Ministry of Health, the number of such centres was 188—viz., 178 in England, 10 in Wales. Besides the treatment provided at the regular centres, special arrangements exist at 11 maternity and child welfare centres for the convenience of affected women and children, and besides these there are 14 hostels for the care of girls suffering from venereal diseases and 8 institutions for the reception of pregnant women. Inquiry at the Ministry has elicited the fact that there are 52 women practitioners holding posts at treatment centres, 18 in London and 34 in the provinces. In London there are women medical officers at Guy's, King's, London, South London, Royal Free, and Royal Northern, while in the provinces there are women medical officers at Ashton-under-Lyne, Bradford, Birkenhead, Birmingham, Blackburn, Bolton, Hull, Leeds, Leicester, Lincoln, Liverpool, Newcastle-on-Tyne, Nottingham, Oxford, Plymouth, Preston, St. Helens, Southampton, Southend-on-Sea, Stroud, Sunderland, Waddon, and York. The Federation is not satisfied with this position and has passed a resolution urging that medical officers treating female venereal disease cases whether in hospitals or clinics should be women practitioners where and whenever such practitioners are available. There is cumulative evidence that the clinics serve their purpose more fully where this is the case; at the Royal Free clinic the medical officers see many of the most dangerous type of prostitute and their ability to get these women into hostels must prevent a large amount of infection. It may be that there are not at the moment enough women with sufficient experience to warrant appointment to such clinics, but if the demand was present there is little doubt that this defect would soon be remedied.

THE Nobel Prize for Chemistry for 1929 has been divided between Prof. Arthur Harden, D.Sc., F.R.S., and Prof. Hans von Euler. Dr. Harden is head of the Biochemical Department at the Lister Institute and Professor of Biochemistry in the University of London. Prof. von Euler holds the chair of organic chemistry in the University of Stockholm and is well known for his work on enzymes and vitamins.

ON Wednesday, Nov. 27th, the Duchess of Atholl will lay the foundation-stone of the new London Clinic and Nursing Home at the top of Harley-street. The ceremony will take place at noon at the Devonshire-place entrance to the Clinic, and will be followed by a luncheon at 1 P.M. at the Trocadero Restaurant, Piccadilly.

HEALTH EXHIBITION IN LONDON.—Lord Askwith will open the New Health Society's second annual exhibition at 3 P.M. to-day, Friday, Nov. 15th, at the Royal Horticultural Hall, Westminster. The exhibition will be open daily from noon to 10 P.M. until Nov. 22nd.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LII.

THE DIAGNOSIS OF ACUTE FOOD POISONING.

PART I.*—CAUSATION AND CLINICAL PROBLEMS.

A STUDENT of medical evidence given at inquests on deaths from food poisoning acquires the impression that the knowledge of this subject possessed by many practitioners lags behind the scientific data available. The more specialised bacteriological and public health aspects of food poisoning are of interest mainly to experts in these subjects, and only those clinical and pathological problems which present themselves to the medical practitioner need be discussed here.

A difficulty which occurs at the outset is that of defining what we mean by "acute food poisoning." The term itself is inaccurate, because in many cases we are dealing with food infections, the poisons being manufactured subsequently to ingestion. Yet if we adopt instead the term food infections we exclude definite types and must include such infectious diseases as enteric fever, paratyphoid fever, dysentery, and cholera. These are not generally understood by the expression acute food poisoning, and the term is reserved for acute illness caused by food, due either to introduced chemical substances, toxic bacterial products in the food, or to the ingestion of bacteria which produce in the alimentary tract products causing acute illness. This clearly is not a watertight definition, but covers generally what is meant by food poisoning and excludes the ordinary bacterial infectious diseases.

Causation.

In order to appreciate the significance of the presence or absence of certain bacteria in the specimens examined it is necessary to bear in mind what agents have been incriminated in cases of food poisoning. A convenient classification is based upon the nature of the irritant, and the following varieties may be recognised.

1. Food may be contaminated with comparatively simple chemical substances not of bacterial origin. These include simple chemical poisons like zinc, arsenic, and copper salts, and rather more complex bodies such as the alkaloids. These may gain access to the food by accidents of manufacture such as the use of arsenic contaminated glucose in beer or sweets, by carelessness of usage as when acid foods are cooked in zinc or copper receptacles, or by criminal addition.

2. Poisoning may result from the consumption of foods inherently poisonous or which become poisonous under certain conditions. Mushroom poisoning is the best-known example of this type, but poisonous berries and the tropical poisonous fish are others. Mussel poisoning, according to the latest investigations, is in the class of foods normally sound which, under certain ill-defined conditions in the life of the mussel, become toxic. Cases of mussel poisoning are rare, but a widespread outbreak has recently occurred with mussels obtained from California waters. In all this group the symptoms are due to chemical poisons of highly complex type.

3. The toxic action of certain bacteria may cause poisoning. Three groups are well defined.

(*a*) *B. botulinus.*—This bacillus in its three types causes the peculiar and *rare* condition known as *botulism.*

(*b*) *Salmonella bacilli.*—Members of this group give rise to the commonest and most important variety of food poisoning. This group includes many types, and not all the members can originate food poisoning. Those most frequently found as a cause of this condition are *B. aertrycke* and *B. enteritidis*, but some half dozen other types may also be concerned. Another well-known member of this group, *B. paratyphosus* B, causes paratyphoid fever but never, or at the most extremely rarely, can cause acute food poisoning. These Salmonella bacilli produce toxins which are highly irritant, while they possess the peculiar property of being heat resistant—i.e., they withstand temperatures of 100° C. and above without impairment of their toxicity. In consequence of this property we can recognise two types of poisoning from their action. In the one the food is consumed containing living Salmonella bacilli, with or without much pre-formed toxin. In the other type the food after preparation has been subject to heat treatment, killing living Salmonella bacilli (which have low heat resistance) but leaving unimpaired their pre-formed toxins. The food is sterile, unaltered in appearance, but highly toxic. Outbreaks of this character are most common in connexion with certain canned foods, mainly canned meat, the heat preparation processes killing the living bacilli. It must here be stated that this conception of the origin of the toxins, which represents my own views and experience, is not universally accepted, especially in America. The arguments in its favour and against it were set out at the discussion [1] held at the last meeting of the British Medical Association (Section of Pathology). Of the frequency of these canned food outbreaks associated with a sound, sterile food there is no question; I have investigated, or have notes of dozens of them.

(*c*) *Dysentery bacilli.*—A few outbreaks are caused by strains of this group. The clinical picture is identical with that caused by Salmonella strains, and they require no further mention.

4. Indeterminate bacteria or their products. While detailed studies assign a larger and larger share of food poisoning outbreaks to the known types mentioned above, and particularly to the Salmonella group, there remains a residuum of possibly 25 to 30 per cent. which are at present unexplainable. No doubt other bacteria will be found to be responsible while irritation almost amounting to food poisoning may be associated with many ill-defined substances.

Certain Factors Excluded.

On the other hand it is possible to exclude certain factors popularly accepted as causes of food poisoning. There is no evidence of any value that putrefactive changes in meat or other foods has ever caused an outbreak of food poisoning, although it is probable that the consumption of incipiently putrefactive food might disagree with individuals and cause symptoms of malaise. *B. proteus*, a highly putrefactive bacillus, has often been credited as the cause of food poisoning outbreaks, but in nearly all the instances the so-called evidence is worthless. It is a possibility, however, that strains of special virulence might cause food poisoning, and this bacillus cannot be entirely excluded.

As regards *ptomaines*, these are non-specific toxic bodies produced in any organic matter allowed to putrefy if the processes are allowed to go on long enough. They are late protein degradation products, never found in food until it is far too nasty to eat. They certainly have nothing to do with food poisoning, and the term "ptomaine poisoning" should be relegated to the limbo reserved for unfounded hypotheses. It is not creditable to medical practice that the term is still so frequently met with, even in text-books.

Clinical Problems.

Food poisoning being so ill-defined a condition it is evident that in some cases doubt must arise as to its diagnosis. Obviously, with a chemical agent the symptoms must vary with the nature of the chemical poison, which is sometimes highly unexpected. For

* Part II., on Laboratory Investigations, will appear next week.

[1] See THE LANCET, August 10th, p. 279.

instance, atropine poisoning has resulted from eating meat stuffed with herbs containing belladonna leaves. Most of these *chemical poisons* cause gastro-intestinal irritation, but usually have a shorter incubation period than the poisons of bacterial origin. *Botulism* has a quite peculiar symptomatology since the toxins act on the nervous system and not on the alimentary tract. Except as a transient initial phase diarrhœa and vomiting are absent, indeed constipation is usual. The characteristic symptoms are visual and eye disturbances, throat symptoms, and general muscular weakness; the temperature is generally subnormal. This type has the longest incubation period (18–36 hours as an average). In *Salmonella food poisoning* the brunt of the attack is on the alimentary tract, and acute diarrhœa, severe vomiting, and abdominal pain are almost invariably present, other less prominent symptoms being a rise in temperature, cramps, and subsequent prostration. When living bacilli are ingested the incubation period is often eight hours or longer. The type due to *Salmonella toxins* without living bacilli presents a very definite clinical picture. The incubation period is quite short (2–4 hours), the onset always acute. These gastro-intestinal symptoms are usually severe in type, more so than with living Salmonella bacilli, and are followed almost always by rapid recovery (24 hours or so), the only deaths being in the old, the very young, or those damaged by concurrent disease.

A suspicion of food poisoning may be easy or difficult to confirm. Diagnosis is easy when a number of persons in one household are affected with acute gastro-intestinal disturbance some time after eating a particular meal. The fact that some escape an attack, even if they all consume the same food, does not of necessity invalidate a food hypothesis. In many outbreaks some who have eaten the poisonous food escape. More complex and difficult of diagnosis is the occurrence of a number of cases exhibiting gastro-intestinal irritation symptoms, but irregularly distributed as regards time of occurrence, and not following or not definitely attributable to any particular meal or article of food eaten. Sometimes very detailed inquiry is necessary before it can be shown that some article is infected but perhaps eaten in the family under different conditions—i.e., cooked, stored, &c. A diagnosis has sometimes to be made from influenza of gastro-intestinal type.

A diagnosis of food poisoning may be difficult when a single case is involved. A person, for example, consumes a meal possibly containing articles often associated with food poisoning, and some hours subsequently is taken ill with diarrhœa and vomiting. The sufferer ascribes it to the food, and may then recollect, or more often thinks he recollects, that he noted something "not quite right" about it. Great caution has to be exercised before accepting such an association as one of cause and effect, and all other possible causation factors need to be considered. On several occasions I have known acute peritonitis from a perforated ulcer or other cause diagnosed as food poisoning. Very detailed inquiries should be made as to whether the suspected food was also eaten by other persons, and if they consumed it without harm. It is unlikely that a food consumed by several persons should make only one of them violently ill. An exceptional case is when the whole of one article is consumed by the sufferer, and then laboratory diagnosis is most valuable. For example, I investigated a single case of acute food poisoning caused by the consumption of a Cornish pasty on a railway station, proof being furnished by bacteriological investigation. Many of the single cases of botulism reported in U.S.A. have an interesting explanation. The person preparing the food, usually home-canned vegetables, notices a peculiar smell and tastes a few drops of the liquor; then recognising it is unsound she throws the rest away. The taster thus furnishes the only case.

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Special Articles.

MEDICINE AND THE LAW.

Criminal Lunatics at Large.

THE Home Secretary was asked last week about the escape from Devizes Mental Hospital of a patient who had been transferred thither a year ago from Broadmoor Criminal Lunatic Asylum. He replied that the Home Office is not officially notified of such an escape; the patient, while under sentences for larceny and false pretences, was certified insane and removed to Broadmoor; when his sentence expired in October, 1928, he ceased to be a criminal lunatic, but, being still insane, was recertified under the ordinary lunacy law and received into the Devizes Hospital. The reference to the ordinary law seems to be to Section 7 of the Criminal Lunatics Act, 1884. When a criminal lunatic is about to be "absolutely discharged" (under Section 5 of the Act) or when his sentence is about to determine, then, if the fact is made to appear to a justice of the peace by notice from the superintendent of the asylum or the governor of the prison, and if "in the opinion of such superintendent or governor such person is insane and unfit to be at large," the justice is to examine the person and make inquiry with the aid of medical evidence and to order his detention as a lunatic if satisfied that the person is insane and ought to be detained under care and treatment.

It does not appear that criminal lunatics are let loose upon the public in large numbers or without adequate discrimination. The Criminal Statistics for 1927 (the last available) show that, of 10 inmates of Broadmoor whose sentences expired in the year under review, only 2 were set at large, the other 8 being ordered by a justice to be removed elsewhere. In the same period 14 were discharged conditionally and 3 cases were readmitted on revocation of conditional discharge. The corresponding figures for the county, county borough and district asylums are as follows:—56 persons were discharged absolutely on the expiration of their sentences; of these only 4 were set at large, one was ordered to be removed elsewhere, and 51 were ordered by a justice to remain in the asylum. The Broadmoor totals of receptions and discharges of criminal lunatics are roughly the same as those for the local asylums put together. Broadmoor received 66 in 1927 and discharged 59; the other asylums received 71 and discharged 63. The Broadmoor total of discharges, however, includes 33 deaths whereas only 2 deaths are recorded in the figures for the local authorities' asylums.

Passports and Kindness.

A medical practitioner was summoned at the North London Police-court on November 3rd for having unlawfully made untrue statements for the purpose of procuring a passport for two men named in the summons. A third man was summoned for aiding and abetting the offence. One of the preliminary steps towards the issue of a passport is that the applicant should produce a declaration in a printed form verified by a declaration made by a banker, mayor, magistrate, minister of religion, barrister-at-law, physician, surgeon, solicitor or other accepted person of official or professional status. The medical practitioner in the Islington case had signed a declaration stating that he had known the two applicants for two years and could vouch for them as fit and proper persons to receive passports. The truth, according to the representative of the Director of Public Prosecutions, was that the two men had been living for only a couple of days in apartments in Upper Rathbone-place. They mentioned to their landlady's husband that they wanted to obtain passports to go abroad; he took them to his doctor and asked him to sign their applications. The

landlady's husband had been known to the doctor for about 10 years and was a patient of his. He gave an assurance that everything was all right, and the doctor signed without reading the cautionary remarks at the top of the printed form. The doctor merely wished to oblige his patient; he had no knowledge of his past life. Unfortunately, the landlady's husband —it was stated at the police-court—had spent nearly five out of the past ten years in prison and was therefore regarded by the authorities as hardly a suitable person to recommend anyone for a passport. The magistrate, drawing attention to the serious consequences of an act of thoughtlessness, dismissed the summons against the medical practitioner on payment of five guineas costs. The landlady's husband, who had aided and abetted the offence, was sentenced to four months' hard labour. There is no need to exaggerate the effect of incidents of this nature. Public opinion did not instantly clamour that the medical profession, having been found unworthy of its responsibilities, should be denied the privilege (such as it is) of certifying the truth of passport declarations. It is, however, well to remember that this kind of certificate is amongst those expressly mentioned in the General Medical Council's "Warning Notice," and that a registered practitioner who thus signs anything which is "untrue, misleading or improper" is liable to have his name erased from the Medical Register. The poet has praised kind hearts and simple faith, but the kind-hearted practitioner at Islington would not have suffered for the simplicity of his faith if he had taken the precaution of reading the document to which he was invited to attach his signature.

THE MOUNT VERNON HOSPITAL, NORTHWOOD.

A NEW SCHEME FOR INVESTIGATING MALIGNANT DISEASE.

RUMOURS of an alteration in the scope of the Mount Vernon Hospital have been current for many months. The details of the reorganisation which are now made public involve the deflection of its activities, formerly directed to the treatment of tuberculosis, towards the investigation and treatment of malignant disease.

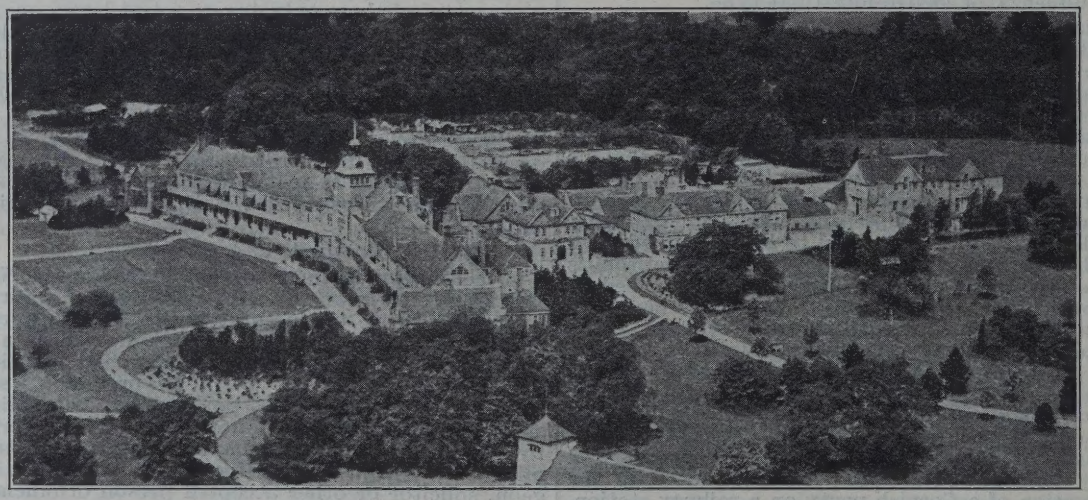
The reasons which have made this change desirable are of considerable importance to all concerned with voluntary hospitals, their history and their future.

The Reasons for the Change.

The hospital was established in 1860 as the North London Hospital for Consumption. At first it dealt only with out-patients at a dispensary in Tottenham Court-road. The venture proved popular, and a house in Belsize Park was converted to form an in-patient department. Towards the end of last century land was acquired at Mount Vernon, near Hampstead Heath, and the hospital built thereon became known as the Mount Vernon Hospital for special purpose of determining the value of the open-air treatment of tuberculosis, at that time in its infancy. The facilities for the treatment of tuberculosis by local authorities have now, however, been so greatly extended that every county has its own sanatorium, and the number of patients desiring to enter the Mount Vernon Hospital has greatly diminished. By 1927, indeed, it had become obvious that only those patients were applying for admission who were in so advanced a stage of the disease that they were regarded as unsuitable for treatment elsewhere. It was therefore decided to divert the activities of the hospital to the investigation and treatment of malignant disease. This decision was approved by the Ministry of Health, the British Empire Cancer Campaign, and the Medical Research Council, and the hospital buildings were temporarily closed and reconditioned at a total cost of about £16,000. An Act of Parliament was required to enable the council of management to apply the lands and investments of the hospital to new objects, and this Act was passed on May 10th of this year.

Aims of the Hospital.

The hospital is now to be devoted to research into the cause and treatment of malignant disease. The first line of research is to be the investigation of



Aerial view of the hospital and outbuildings.

[*Central Aerophoto Co.*

pulmonary diseases, the heart, and diseases and affections of the joints. These premises were taken over by the Medical Research Council in 1913 and now form the laboratories of the National Institute for Medical Research.

In 1904 land at Northwood, Middlesex, amounting to nearly 100 acres, buildings, and equipment were given by the late Mr. Charles Dunell Rudd for the treatment by radiotherapy; if, in the future, any other form of treatment shows better promise, then this in turn will be tried on a large scale. In addition to clinical investigation, laboratory research will be carried out in a special building. The investigation of radiological treatment will include radium therapy by needles and surface application, and X rays.

Although the Enabling Act was passed less than six months ago a considerable amount of work has already been carried out, and 159 cases of malignant disease have passed through the hospital. The radium

The long south frontage, with terrace and balconies.

for these cases has been obtained by loan from other hospitals and from private supplies owned by members of the staff. Much more must be available, and, as a beginning, half a gramme has been ordered for the hospital in the form of needles, and the first instalment has recently arrived. In order to carry out the work efficiently on 1500 patients per annum this supply will have to be augmented by 2½ grammes. For X ray treatment at least two sets will be necessary.

Follow-up Department.—The results of treatment will be carefully recorded on special forms and diagrams and the patients seen at frequent intervals for years after treatment has ceased. In connexion with the follow-up department notes will be taken down in shorthand of every examination. The existing London section in Fitzroy-square will be the centre for diagnosis and for the follow-up examinations, and it is hoped that the railways may give special facilities of travel to the patients.

Medical Staff.

The members of the honorary medical and surgical staff who are remaining on the staff under the new conditions include Dr. J. F. Halls-Dally, Dr. R. Fielding-Ould, Mr. D. C. L. Fitzwilliams, Mr. C. E Shattock, Mr. P. J. Jory, Mr. H. Robinson, Dr. J. E. A. Lynham, Dr. Percy Hall, Dr. M. Weinbren, and Mr. J. G. Fernie. New appointments include Lady Barrett, Mr. Stanford Cade, Mr. Malcolm Donaldson, and Mr. Geoffrey Keynes.

The medical and laboratory investigations in the hospital are to be carried out by the staff acting as a *team*. The term of office of each member of the honorary staff is to be for one year only with eligibility for re-election, the term of office being entirely subordinate to the research interests. The members of the staff are not given proprietary rights over a definite number of beds, because it may be advisable from time to time to alter the proportion of admission of patients suffering from any particular type of cancer. The additional members of the medical staff appointed since the reorganisation of the hospital have been chosen from different hospitals because of their interest and experience in the radiological treatment of malignant disease. A whole-time pathologist will be appointed immediately and in the near future a physicist and a whole-time radiologist. It is also part of the original scheme that a medical director shall be appointed to lead the team and coördinate the work. This post would be an important whole-time one with security of tenure for several years.

It is hoped that keen research workers in cancer will gravitate to the hospital from all parts of the Empire. Clinical assistants will be appointed and courses of instruction in radiotherapy will be arranged.

A near view of the terrace.

Advisory Committee.

This committee is a new departure in hospital organisation and its duties may be summarised as follows: To advise the Council of Management upon the staffing of the hospital. To advise the Council of Management upon all medical and scientific matters. To suggest the forms of therapy and research which should be undertaken in the hospital.

The present members of this Advisory Committee are Dr. A. E. Barclay, Dr. G. E. Birkett, Dr. R. G. Canti, Prof. C. C. Choyce, Mr. W. D. Harmer, Prof. F. L. Hopwood, Sir Thomas Horder, Prof. E. H. Kettle, Mr. H. S. Souttar, and Sir Charles Gordon Watson, and other members will be coöpted shortly. Half the original members will retire at the end of three years, but in the future members of the Advisory Committee will have a tenure of office for four years, with eligibility for re-election after an interval of one year.

Accommodation and Equipment.

The hospital provides for 150 beds, and this accommodation should give a minimum turnover

of 1500 patients per year. The building consists of :—

(*a*) Fourteen single-bed wards, ten 10-bed wards, two 18-bed wards.

(*b*) An operating theatre. A new theatre block to contain two complete operating suites is to be built.

(*c*) An X ray installation for diagnosis, which will be enlarged and brought up to date.

(*d*) A pathological laboratory. This will be used as temporary accommodation until the new block of research laboratories has been built.

(*e*) Various rooms and offices for the accommodation of the matron and resident staff.

(*f*) At either end of the main building are two very large rooms; one of these will be reconstructed to house the deep X ray therapy department, the other will be used for the officers of the follow-up department.

(*g*) A central hall.

There is a separate nurses' home and a block of buildings containing boilers, electric light plant, laundry, &c. On the west side of the hospital are the foundations of a new wing, which, when completed, will accommodate 100 additional beds, a proportion of which will be reserved for paying patients.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

New Departure in Scottish Research.

A NEW departure of the first importance has taken place in Scotland. A few years ago, when Major Elliot was Under Secretary of State for Scotland, an effort was made to get the official organisation for medical research onto a more satisfactory footing. One of the immediate results of this effort was the well-known experiment—financed by the Empire Marketing Board—on the value of milk as a food for school-children. The organisation established at the time will now be superseded by something much more comprehensive and better adapted to enable the Scottish departments, universities, colleges, and institutes to keep touch with each other and with the local authorities and to make medical and nutritional and related research a continuous accompaniment of administration.

Mr. Tom Johnston, the present Under Secretary of State, recently held a representative conference in Edinburgh. The object of the conference, he explained, was to set up a permanent liaison committee between research bodies and local authorities to see that the results secured by research institutions should be speedily made available to the public.

It is hoped that, at last, Scotland will receive her proportional official share in the work of the Medical Research Council and that the full functional use will be made of the official medical and general scientific staffs of the Departments to investigate the many problems that emerge in the course of health administration. The Departments are to be congratulated on the step taken by Mr. Johnston. The presence of Sir Walter Fletcher's name on the liaison committee, elected at the close of the meeting, indicates that the new development is a natural expansion of the working organisation of the Medical Research Council, of which he is secretary. The other members of the Committee are: Dr. J. P. Kinloch (Chief Medical Officer, Department of Health for Scotland); Dr. J. B. Orr (Director of the Rowett Research Institute, Aberdeen); Sir Robert Greig (Secretary of the Department of Agriculture for Scotland); Prof. T. P. Cathcart (Glasgow University and Hannah Dairy Research Institute); Prof. F. A. E. Crew (Edinburgh University, Animal Breeding Research Department); Dr. T. J. Mackie (Professor of Bacteriology, Edinburgh University); and Mr. John Jeffrey (Secretary of the Department of Health for Scotland). Dr. Kinloch is to be chairman of the Committee.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Irish Free State Medical Registration Council.

THE half-yearly session of the Irish Free State Medical Registration Council was held in the College of Science on Nov. 5th, 1929, the president, Dr. D. J. Coffey, presiding. The president made a statement, in the course of which he pointed out that the privileges of registration—the exclusive right of registered practitioners to give legal certificates, to claim fees in the courts, and to fill public medical appointments—had been in operation since May 26th, 1928. The Council, he said, cordially appreciated the fact that a large number of Irish-trained medical men permanently resident out of Ireland had manifested their interest in the establishment of the Register by taking the necessary steps to include their names.

Death of Dr. Frank Dunne.

Dr. Frank Dunne, of Dublin, died last week after a brief illness. He graduated as M.B. of the Royal University of Ireland in 1891, and was for many years visiting physician to the Consumptive Hospital of the Dublin Union, and also to the Allan A. Ryan Home for Consumptives. He was much interested in the treatment of tuberculosis, and did a considerable amount of work with Denys's tuberculin, which he brought before the notice of the profession in Ireland. During the war he joined the Royal Army Medical Corps, and served in Egypt for some years. He was a careful and observant physician, a man of wide general culture, and of great kindliness of character. His death is greatly regretted by his professional brethren, and also by his large class of sick poor whom he tended with skill and humanity.

Royal Academy of Medicine in Ireland.

The annual report of the Royal Academy of Medicine in Ireland for 1928–29, which was circulated a few days ago, shows a slight increase in the number of Fellows and Members, 258 compared with 245 in the previous session. Twenty-seven national meetings were held, with a total attendance of 1091, the largest number recorded for some years. The section of medicine showed the highest average attendance, the section of obstetrics coming next. The financial statement shows an improvement of a little over one hundred pounds on the year's working. The deaths of five Fellows are recorded—Mr. L. L. Cassidy, Dr. A. J. R. Dungan, Dr. W. A. Fogarty, Prof. T. E. Gordon, and Sir W. J. Thompson. Interesting biographical notices of these are supplied by the general secretary. There are 22 Honorary Fellows on the roll of the Academy.

Libel Action between Medical Men.

In the High Court, Dublin, last week, before Mr. Justice Hanne and a jury, Dr. H. V. McKeogh, of Killaloe, Co. Clare, sued Dr. P. J. Holmes, also of Killaloe, for alleged libel and malicious persecution. Dr. McKeogh had been prosecuted last year on a charge of attempted blackmail on the information of Dr. Holmes, the case ending in acquittal. The alleged libel had been contained in a letter written by Dr. Holmes to a solicitor acting for a third party. The jury found for the plaintiff in respect of both claims, assessing damages at £200 for libel, and £500 for malicious persecution.

The Robert Campbell Oration.

The Robert Campbell Oration for 1929 was delivered in the Medical Institute, Belfast, on Nov. 8th, by Prof. Andrew Fullerton. Mr. Howard Stevenson, President of the Ulster Medical Society, was in the chair, and was supported by Sir Thomas Houston. There was a large audience, widely representative of the medical profession in Ulster, and including Mrs. Robert Campbell and many of the late surgeon's intimate friends. After an eloquent and particularly

apt appreciation of the late Mr. Campbell's life and work, the orator reviewed the progress of urology from ancient to modern times, paying a striking tribute to the work of Harry Fenwick in England and H. H. Young in America. An interesting series of lantern slides illustrated the lecture. A vote of thanks was proposed by Prof. Thomas Sinclair, seconded by Dr. James Moore, and carried with enthusiasm.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Congress of German Medical Historians.

THE German Medical History Society held its annual congress this year in Budapest. The occasion was taken to unveil a statue of Semmelweis built in the Elisabeth park in the centre of the city. Foreign speakers gave full recognition to the pious work done by Tibor Györy, professor of medical history at the University of Budapest, in collecting together the works of Semmelweis, and in throwing light on the question of the priority of his famous discovery.

Of the scientific communications to the Congress the most noteworthy was a lecture delivered by Prof. Sudhoff, the president, who described the results of his investigations into medical science as taught at the Arabian Toledo and Salamanca schools, and showed how this knowledge was linked with that developed in the Southern French and Italian universities. Among the other speakers Dr. I. Fischer (Vienna) exhibited a biography of Hippocrates, hand-written by Johannes Cuspinianus (1473–1529); Dr. Else Haberling (Düsseldorf) recalled the early methods of training midwives in Germany; Prof. W. Haberling (Düsseldorf) gave an account of horse riding, as a method of treatment popular in the classic age. Prof. Koch, of Frankfort, urged in his address the closer linking of medical history with medical training; L. Englert read a paper with the title "The Early History of Humoral Pathology"; and O. Temkin (Leipzig), lectured on Celsus and the Roman medical sciences.

In conjunction with the Congress a medico-historical exhibition was arranged by Joseph Ernyei in the Industrial Art Museum.

Articles by Doctors in the Lay Press.

The Press Committee of the Budapest Medical Association, having in mind recent publications on medical subjects in lay journals, warns all doctors that, though it is desirable that scientific instruction on matters of health shall appear in the daily papers, it is objectionable to exploit such articles for advertising purposes. The Ministry of Public Hygiene has shown the way to write such articles, by publishing serial notes dealing with the summer mortality of infants and the prophylactic measures designed to lower it. Caution in publishing scientific articles in the daily papers is advised, because such publications, particularly if the writer gives advice on treatment over his name, may bear the character of an advertisement. The Press Committee investigates all such articles and proposes in the future to deal rigorously with them according to the regulations of the Medical Association. Medical men are invited to submit their articles in the first place to the Press Committee, who will endeavour to place suitable manuscripts in respectable journals.

The Number of Practitioners in Hungary.

According to the latest statistical returns the number of medical practitioners in Hungary amounts to 6442, the ratio to the population being 1 : 1265. Almost half of the doctors reside in Budapest, so that the ratio in this city is 1 : 365, resulting in a keen struggle for existence, whereas there are over 2000 villages without a doctor. The number of medical students at the University of Budapest in the session 1928–29 was 1418, including 90 women, the number of students of pharmacy being only 213. The number of doctors qualifying during the year was 307; this is regarded as far too many, since the demand at present is almost nil.

The Ascertainment of Physical Defectives.

Mr. Eugen Pintér, member of the Chamber of Deputies, has proposed a scheme for the ascertainment of physical defectives, since it is the duty of the State to provide for their treatment and to educate them to be self-supporting, as well as to maintain those incapable of earning a living.

In order to obtain reliable statistics Dr. Michael Horvàth, professor of orthopædics, will tour the country, and will give lectures to doctors, magistrates, and interested laymen. When the data have been collected the organisation of training centres will be undertaken. Institutions combining hospitals, schools, and workshops, staffed respectively by surgeons, teachers, and foremen, will have to be provided, but this will take time.

The work cannot be launched simultaneously through the country; Mr. Pintér suggests that the institutions first established should be in the vicinity of the four universities. The State can make a start by ascertainment but the organisation will require moral and material support from the whole community if it is to be a lasting success.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Medical Education and Registration.

THE proposal by Government for a grant of Rs.39,000 for the appointment of an officer of the Indian Medical Service to supervise medical education in India was vigorously opposed in the Assembly at its meeting on Sept. 25th. Discussion was still in progress when the House adjourned and the proposal is shelved until the Delhi session. The General Medical Council is bound to insist on a certain standard of proficiency before granting recognition of degrees granted in India—or anywhere else for that matter; if India consistently refuses to attain to this standard her degrees will, we fear, go unrecognised.

The Congress Party intends, we understand, to introduce in the next session of the Bengal Legislative Council a Bill to amend the Bengal Medical Act No. 6 of 1914 so as to "vest the Bengal Council of Medical Registration with wider powers and free it from Government control." One of the most important clauses in the proposed Bill aims at controlling the State Medical Faculty, the governing body of which is at present nominated entirely by Government.

A New Disease in Bombay.

Sixteen cases of a peculiar disease, the intimate nature of which has not yet been discovered, have appeared in Bombay since April last. Of these seven have proved fatal, and St. George's Hospital was closed for 11 days in September to allow of complete disinfection following the treatment of the cases. Subsequent events seem to have ruled out the possibility, suggested a few months ago, that we are dealing with examples of Dukes's "fourth disease," and opinion appears to be veering in the direction of a streptococcal infection similar in type to malignant scarlet fever. Research into the ætiology is in progress at the Haffkine Institute, Parel, but no definite conclusions have as yet been reached.

The Simla Municipality, at its meeting on Sept. 27th, discussed the question of medical inspection of passengers entering Simla, as a precautionary measure against the importation of infectious diseases. After a lengthy debate the committee decided to ask the

Punjab Government to set up permanent accommodation for a medical inspection staff at Tara Devi.

After a stormy career, Mr. Sarda's Child Marriage Bill, designed to prohibit the marriage of girls below the age of 14, was passed by the Assembly on Sept. 23rd by 67 votes to 14. Despite the fact that eight Moslem members protested against the Bill by walking out of the Chamber it is recognised on all sides that the measure is one of the greatest national importance.

Public Health Services.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Average elementary school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.†
Taunton ..	2784	2592	964	2571	16·0
Torquay ..	3841	3336	1264	5191	20·1
Dover.. ..	—*	5371	2028	3999	8·8
County of Cambridge	9770	8580	3573	6455	7·7

* Not given. † Excluding dental defects and uncleanliness.

Taunton.

THE borough has two features which, in some respects, tend to facilitate the work of caring for the children. It is the administrative centre for Somerset, and therefore use can be made of facilities provided by the county council; the county orthopædic clinic, for instance, is held in the school clinic at Taunton and is available for the infants and the school-children of the borough. A similar arrangement holds at the tuberculosis dispensary. Both the orthopædic and antituberculosis work are greatly aided by voluntary local agencies. Coördination of all the health services is complete, since Dr. John Allen combines the duties of medical officer of health and school medical officer, besides directing the work of the maternity and child welfare scheme. He deals with children employed in entertainments, and cites as examples of the need for careful supervision over these children, that one of their "matrons" considered it not unreasonable for these children to sleep in one bed, and another thought there was no objection to a boy of 14 sleeping in the same room as adult females. The small number of exceptional children makes it more difficult to provide special schools, and consequently there is none. Dr. Allen says there are 32 feeble-minded children attending ordinary schools where "they can obtain little or no benefit from the education provided," and that it would be greatly to their advantage if special classes could be arranged in two schools, with education suitable to their capacities. There would also seem to be a need for the provision of an open-air school as there are 34 "delicate" children and several others who could well attend these. At some other towns with but little larger numbers of children the open-air school is doing excellent work.

Torquay.

In his introduction to the detailed report on school medical work Dr. T. Dunlop remarks that the personnel of the staff is the same as in 1926–27, and that such continuity of service tends to greater efficiency in the work. Dr. J. V. A. Simpson has carried on the school duties for a succession of years and is also in charge of the maternity and child welfare centre, so that he sees the same individual as a baby, a school entrant, and as an older child about to leave school. Such continuity, in the double sense, is of special value in promoting what he obviously has at heart, the steady inculcation of habits of health. If, in the words of Matthew Arnold, "Education is an atmosphere, a discipline, a life," Dr. Simpson holds that the part which the school medical service plays in it "may be small, but it is important." The qualifying phrase seems to us unduly modest; this service is of immense importance, its greatest value lying not in its curative work, but in the education in hygiene which it carries out in coöperation with the teachers. Dr. Simpson himself admits this when he remarks that mothers get to appreciate the early signs of defect and come to the welfare centre because the elder brother or sister at school has been successfully treated. Again, when congratulating the authority on improvements in the hygiene of school buildings (largely as the result of his long and painstaking researches with the kata-thermometer), he emphasises its far-reaching significance, for not only does it react sharply on the health of the individual, but it is in itself an education for the pupils—a knowledge which will be applied later in their own homes. He is still more emphatic about the true use of an open-air school, which is to teach the child how to keep well by the observance and practice of a healthy way of life. It needs, he is satisfied, something more than a casual effort to ensure that a child has in all respects a sound general upbringing, but it is within the scope of human achievement.

Dover.

In his introduction Dr. A. B. McMaster says the publication, sanctioned by his committee, of the school report in one volume with that of the public health gives greater facilities for comparing the various sections of the work. The range of this work is especially wide in Dover, which is a town with the usual schools, a seaside resort, and a port with a military quarter. The maternity and child welfare work is being further developed, greater use being made of the beds provided at the Royal Victoria Hospital; the rate of maternal mortality is only 2·6 per 1000 this year. At the welfare centre 442 children were treated, and it is noteworthy that of 24 infants with ophthalmia, all retained unimpaired vision. The approval of the Ministry has been obtained for a scheme for orthopædic treatment of children under five, which will in time reduce the number to be dealt with at school age. The need for early treatment generally is illustrated by an analysis of 30 cases of convergent squint, which shows that in 14 the vision of the affected eye had become 6/60 or worse. Much useful work on refractive errors was again done at the ophthalmic clinic, when glasses were prescribed for 94 per cent. of those who attended, and of these 84 per cent. obtained them. Dental conditions appear to be generally good; attendance increased and extractions of permanent teeth diminished, while 38 per cent. of the children have sound teeth. "There is, unfortunately," writes Mr. F. Constant, L.D.S., "a small percentage of children with septic mouths, whose parents refuse year after year, despite appeals and interviews, to allow to be treated. To save these children suffering and perhaps permanent ill-health, it is a question whether some judicious pressure should not be brought to bear in the more serious of these cases." Dr. McMaster has used his influence against expenditure on a water-softening scheme, which as he shows is not necessary for health, and money is wisely being spent in other directions, such as the new school in Astor Avenue, which in many ways comes near to the ideal.

County of Cambridge.

Dr. F. Robinson's area is entirely rural in character, and this feature affects result sand methods in many directions. In rural areas the child population tends to be less physically defective than that in many of the towns, while ascertainment is carried out with greater difficulty; it is therefore not surprising that

the percentage of defects found is much below the average for England as a whole. The travelling dental clinic, adopted early in this county, appears to be yielding good results; for example, the proportion of children found to need dental treatment in 1928 was only 40 per cent., compared with 65 per cent. in 1914. The percentage was even lower in 1922, and Mr. J. C. Evered, L.D.S., suggests an interesting explanation. The greatest crop of dental cases occurs at 7, so it would be especially the children born in 1915 who would affect the figures. Now whereas in central European countries the nutrition of the children suffered severely at that time, the opposite was the case in this country, perhaps on account of high wages and separation allowances. Hence it may be that better nutrition in infancy produced teeth more resistant to decay. In 1928 the percentage of refusals was lower by 1·7 per cent. than last year, an improvement to be attributed largely to the enlightenment of the parents, for which special efforts have been made at the welfare centre and the women's institute, good use being made of cinema films. In this type of area it is not surprising that the establishment of an orthopædic scheme will need an orthopædic surgeon to visit several local centres in turn, and an orthopædic nurse to travel about constantly. In country districts the new grouping of schools makes the provision of meals specially important, and a good account is given of plans to cope with the difficulty; special mention is made of what is done at the Bassingbourn Council School, where a good dinner is provided at a cost of 2½*d*. A few children whose nutritional state is so bad as to prejudice their education are sent to residential open-air schools. Owing to the scattered nature of the district no special nursery schools have been established. There has been a striking improvement in cleanliness, very satisfactory for a rural area; only 4 per cent. of the school-children were found to be not clean. There should, says Dr. Robinson, be a still further reduction in future years, as the girls grow to the age of motherhood who have become familiar with the problem through the scheme of school medical inspection. The same thought for coördination and continuity is evident in the lectures to mothers and in the extension of treatment of squint to the infants under the care of the health visitors.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 2ND, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 168 (last week 131); scarlet fever, 3487; diphtheria, 1748; enteric fever, 83; pneumonia, 979; puerperal fever, 42; puerperal pyrexia, 96; cerebro-spinal fever, 4; acute poliomyelitis, 20; acute polio-encephalitis, 4; encephalitis lethargica, 15; dysentery, 7; ophthalmia neonatorum, 108. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Nov. 5th–6th was as follows:—Small-pox, 173 under treatment, 8 under observation (last week 172 and 12 respectively); scarlet fever, 2763; diphtheria, 2537; enteric fever, 97; measles, 271; whooping-cough, 121; puerperal fever, 25 (plus 16 babies); encephalitis lethargica, 124; poliomyelitis, 9; "other diseases," 22. At St. Margaret's Hospital there were 12 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 7 (1) from enteric fever, 20 (4) from measles, 7 (0) from scarlet fever, 15 (1) from whooping-cough, 39 (6) from diphtheria, 102 (30) from diarrhœa and enteritis under two years, and 40 (9) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London were reported from Wood Green, West Bromwich, Grimsby, Wigan, Doncaster, and Newcastle-on-Tyne, 1 each. Liverpool still reports 11 deaths from diarrhœa, Manchester 8, Birmingham and Hull 5 each.

The number of stillbirths notified during the week was 252 (corresponding to a rate of 39 per 1000 births), including 38 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. J. Hamilton to be Surg. Lt.-Comdr.

The following appointments have been made:—Surg. Comdrs. W. W. D. Chilcott to *Emperor of India;* H. B. Parker to *Hawkins;* W. C. Carson to *Vulcan;* J. M. Horan to *Delhi;* M. S. Moore to *Lucia;* and G. B. Cockrem to *Vivid*, for R.N. Barracks, Devonport. Surg. Lt.-Comdr. (D.) R. J. M. Andrews to *Vivid*, for R.N. Barracks, Devonport. Surg. Lts.; C. Keating to *President*, for three months' post-graduate course; R. C. Foster to *Vivid*, for R.N. Hospital, Plymouth; R. H. Dummett to *Vivid*, for R.N. Barracks, Devonport; and J. B. Douglas to *Hawkins.*

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. W. Greaves to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Capts. to be Majs.: Bt. Maj. R. E. Barnsley, J. R. N. Warburton (and remains secd.), W. L. E. Reynolds, A. Mearns, A. E. Richmond, and T. B. H. Tabuteau.

TERRITORIAL FORCE.

Maj. T. H. Oliver resigns his commn.

Capt. O. G. Misquith to comd. 7th (Southern) Hygiene Co.

Capt. E. H. Mayhew, having attained the age limit, relinquishes his commn. and retains his rank.

Lts. J. Kerr and E. R. C. Walker to be Capts.

E. M. R. Frazer (late Offr. Cadet, Edinburgh Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE.

W. S. Stalker is granted a temporary commission as a Flight Lt.

Flying Offrs. Leo O'Connor, A. L. St. A. McClosky, and Ronald Thorpe are promoted to the rank of Flight Lts.

Flight Lt. (Acting Squadron Leader, Hon. Wing Commander) J. N. MacDonald is promoted to the acting rank of Wing Commander, with pay, whilst so employed.

Flying Offr. E. A. Wilson relinquishes his short service commission on account of ill-health.

Flying Offr. V. G. Pedley (Temp. Lt., General List, Army, Dental Surgeon) relinquishes his temporary commission in the R.A.F. on completion of service.

INDIAN MEDICAL SERVICE.

Lt. Thaku Chuharmal Ramchandani to be Capt. (prov.).

Lt.-Col. J. Forrest retires.

The undermentioned relinquish their temp. commns.: Temp. Capts. Hari Krishna Datta and Shiv Shanker Gupta, and Temp. Lt. Ellamana Siva Rama Menon.

COLONIAL MEDICAL SERVICES.

The following appointments were made during October: Dr. F. D. Gillespie, Dr. H. Scrimegeour, Dr. J. H. Strahan Dr. T. F. Strong, and Dr. S. N. Swift, Medical Officers, Federated Malay States; Dr. C. E. Hagenbach, Medical Officer, Malayan Medical Service; Dr. W. S. Smith, Medical Officer, Gold Coast; Dr. H. S. R. Broadbent, Medical Officer, Kenya; Dr. A. R. Cox, Medical Officer, Northern Rhodesia; Dr. Peaston, Medical Officer, Sierra Leone; Dr. D. Russell, Assistant Medical Superintendent, Mental Hospital, Singapore; Dr. J. J. Black, Dr. R. I. Hyder, and Dr. G. A. T. Jones, Medical Officers, Uganda; and Dr. R. Ramsay and Dr. P. B. Wilkinson, Medical Officers on the West African Medical Staff.

PRESENTATION TO A MEDICAL MAN.—Dr. Robert Fell, who has been the senior anæsthetist at the York County Hospital for 20 years and who has lately retired from the active staff, was entertained at dinner last week by his colleagues. Dr. W. A. Evelyn, senior physician to the hospital, was in the chair, and after dinner Dr. Fell was presented with a silver salver.

Correspondence.

"Audi alteram partem."

THE MEDICAL REGISTER.

To the Editor of THE LANCET.

SIR,—Voting papers in connexion with the election of Direct Representatives are being issued on Thursday, the 14th inst., to all practitioners having registered addresses in England and Wales. Any such practitioner who does not receive a voting paper, whether he wishes to vote in the election *or not*, should immediately communicate with the office in order to ascertain that his address is correctly entered in the Register.

I am, Sir, yours faithfully,

NORMAN C. KING,
Registrar, General Council of Medical Education and Registration of the United Kingdom.

44, Hallam-street, Portland-place, London, W.,
Nov. 12th, 1929.

VACCINATION OR INOCULATION AGAINST SMALL-POX?

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 2nd Dr. H. T. Gillett asks whether any experiments are being done on the production of immunity by killed vaccinia virus. In the same issue Dr. S. P. Bedson points out that I am conducting an investigation here into this question. This work has the approval and assistance of the Ministry of Health. My research is, at present, in its earliest experimental stage and few conclusions can be drawn from it. The majority of the experiments have been done on rabbits and have proved very discouraging but, recently, experiments with guinea-pigs have given more hopeful results. These findings are in accord with those of Iwanoff who also found guinea-pigs easier to immunise than rabbits.

With reference to your editorial comment upon Dr. Gillett's letter I cannot see that, should a method ever be evolved for protecting man against variola with killed virus, this would require a stock of real small-pox virus. The viruses of vaccinia and small-pox are immunologically identical and mutually protective, and the killed vaccine would be made from the former virus just as is the living vaccine in present use.

I would add to your list of virus infections from which a killed vaccine confers immunity yellow fever, against which both formolised and phenolised viruses are effective, and fowl-pox from which even a heat-killed virus provides immunity. The length of your list reinforced by my additions strongly suggests that the production of immunity by killed vaccinia virus only awaits the discovery of the correct technique.—I am, Sir, yours faithfully,

JOHN BLAND,
Freedom Research Fellow.

Hale Clinical Laboratory, London Hospital, E.,
Nov. 7th, 1929.

To the Editor of THE LANCET.

SIR,—The suggestive and valuable Observations on Vaccination by Dr. Bedson, and the letter from Dr. Gillett, both of which appeared in your issue of Nov. 2nd. indicate the need for the elaboration of a method of vaccination which will be devoid of the inconvenience unavoidably associated with the technique so far employed. At present we are engaged in an investigation of the question raised by Dr. Gillett—viz., the (possible) production of immunity against small-pox by inoculation of killed vaccinia virus. This work is being conducted on behalf of the Medical Research Council and is a natural corollary of our observations already published in Special Report Series No. 143 of that body.

The necessary preliminary to the production of immunity against small-pox is that it must be shown that the immunisation by vaccinia virus which has been rendered innocuous will protect against living vaccinia virus, and in this we have met with considerable success. One point must be stressed—namely, that if a living virus is used for immunising, only a small dose may be required, the immunity really being developed by reproduction in the tissues of the virus inoculated, whereas with a dead virus very much larger doses may be necessary. It is not possible to standardise a living virus unless in terms of infectivity for some laboratory animal—always an uncertain method—while it is not difficult to standardise, in the physical sense at least, the dose of the killed virus; on the other hand, such physical standardisation must be correlated with physiological activity.

Our observations are not yet sufficiently numerous to permit of a definite statement being made, but the indications so far obtained from our work are that a living virus, after modification in vitro without the employment of either antiseptics or heat, may fulfil the required conditions, these conditions being adequate protection unaccompanied by untoward local reactions or danger of post-vaccinal sequelæ.

We are, Sir, yours faithfully,

W. J. TULLOCH.
J. CRAIGIE.

Bacteriological Department, University College, Dundee,
Nov. 5th, 1929.

THE CRAFT OF SURGERY.

To the Editor of THE LANCET.

SIR,—Though I have left the profession I have not lost my interest in medicine, and my experience in the war certainly increased this interest; I hope, therefore, I shall not be considered presumptuous if I say something about surgery, considered as a craft, and even make some suggestions. Surgery is a craft, a very skilled craft, requiring much natural ability and practice in its leaders, the surgeon being the principal craftsman in the medical profession, who is called on to act, when action is considered necessary. That he is much more than a craftsman hardly needs stating. The uses of surgery are increasing every day, and good surgeons are required all over the Empire; and no medical man out of touch with a large town can ever be exempt from being called on to operate; it is becoming more and more important that every medical student should be trained in the craft of his profession.

Is this craft constantly and systematically taught, for it certainly was not in my day? The surgeon's craft, owing to the fact that the work is done on living bodies, does not exactly correspond to any other, but it is closely allied to others. The instruments of surgery, though to-day very numerous, largely consist of forms of knives, saws, scissors, forceps, drills, chisels, files, hammers, screw-drivers, and needles and thread. These form in varying forms the tools of other crafts, such as carpentry, stone cutting, leather cutting and sewing, and upholstery. It would not therefore be very difficult to find masters to teach what may be called the fundamental use and upkeep of these tools, the pupil practising upon the various materials. I feel safe in saying that a course of stone cutting, even if it only consisted of lettering under, say, Mr. Eric Gill, the sculptor, would be useful to the future orthopædic surgeon. This constant practice of the hand would give a confidence to the young surgeon, which in my day he had to acquire chiefly on the living body, besides being a great relief from the reading of books. No one can cram up a craft, so that the good man would feel he could not fail in this part of his examination, while the poor craftsman would be told by his instructors that he had no chance. Even in the Final Fellowship Examination in the 'eighties, the test of skill in operating did not keep out the "butter fingers."

The born surgeon, though he probably would be the first to take advantage of this kind of instruction, can look after himself, for he can pick up what he wants anywhere; but there are not enough born surgeons to go round, and the more ordinary man must be taught the craft of surgery in exactly the same way as a carpenter or stone cutter is taught his particular craft, by learning the use of his tools under a good instructor. In one branch of medicine, dentistry, the necessity of high-class craftsmanship is well understood, and ingenious methods have been devised to teach the student the use of his hands. Dissecting would form a useful link between fundamental craftsmanship and operating first on the dead then on the living.

We are not naturally accurate, we make ourselves accurate because necessity drives us. A painter, if he is an artist, will always try to express himself before he knows anything of the craft of painting; he will force himself to learn to draw and paint, because he finds out the necessity. Perhaps my only valid excuse for daring to write this letter is that I have practised and instructed in two callings, both of which, for their fullest expression, require such infinite labour from the apprentice.

I am, Sir, yours faithfully,

HENRY TONKS.

Slade School of Fine Art, University College, Gower-street, W.C., Nov. 11th, 1929.

BROWN *v.* WHITE BREAD.

To the Editor of THE LANCET.

SIR,—Hartwell and Mottram found that their mice did not do well on an "Essex" diet, that is, a diet based on one which Dr. A. B. Hill found to be an average one for Essex agricultural labourers and their families. Miss Brad and I have been inbreeding a stock of mice for six years and we have found the mice do very well and breed very well on an Essex diet. Our diet consists of meat, 5·8; potatoes, 28·2; greens or peas or beans, 6·2; cheese, 0·8; tangerine, 2·8; sugar, 5·4; rolled oats, 0·8; milk, 8·3; white bread, 41·7. The food is got as cooked for our canteen lunch and is crumbled, shredded, and mixed together, and then minced. No water is added. We have come to regard this diet as excellent for producing fine-looking and well-breeding mice, better than what we call our "mild" diet, three kinds of grain and raw green stuff.

I am, Sir, yours faithfully,

Nov. 9th, 1929. LEONARD HILL.

INTERPRETATION OF FERTILITY TESTS.

To the Editor of THE LANCET.

SIR,—May I make two observations upon the excellent article in your Clinical Interpretation Series by Mr. Kenneth Walker last week. Incompatibility or relative fertility is often due to lack of sexual orgasm in the female with a certain male partner. Women respond with varying intensity to different males, and consequently there is a variation in quantity and quality of their sexual secretions during intercourse. This also explains why a woman will often infect one man with gonorrhœa and not others. In other words she suffers from a type of impotency.

The second point is of great medico-legal importance, particularly in cases of disputed paternity. Mr. Walker quotes the numerical calculations of spermatozoa by Comber and Sanders, and points out that conception very rarely took place when the figure was below 60 million. I would suggest some other factor was operating. Bearing in mind that usually only one spermatozoon penetrates an ovum, and that simply spraying the vulva with semen has caused pregnancy, I at least would hesitate to give a negative reply unless I found 60 million in a specimen.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 9th, 1929. M. W. BROWDY.

THE HEALTH AND CONDITIONS OF WORK OF MEDICAL STUDENTS.

To the Editor of THE LANCET.

SIR,—Mr. Corner cannot, I think, have paid me the compliment of reading my paper, for he entirely misinterprets its purpose.

As Mr. Corner seems under a misapprehension with regard to the object of my address, which was to consider the health and mortality, not the careers, of medical students, I cannot but be doubtful as to whether the papers that he cites, his own and one by Sir Squire Sprigge, would have helped me materially. When I wrote asking for information on my subject, the Dean of St. Thomas's Hospital did not mention Mr. Corner's paper, which Mr. Corner tells me was published in the *St. Thomas's Hospital Gazette*. The Dean of St. George's Hospital similarly did not refer me to Sir Squire Sprigge's contribution regarding St. George's students. Clearly these authorities, who were in a better position than I was to be familiar with the articles referred to—*St. Thomas's Hospital Gazette* is little read outside St. Thomas's—did not regard them as being pertinent to my inquiry.

I am, Sir, yours faithfully,

E. GRAHAM LITTLE.

House of Commons, S.W., Nov. 12th, 1929.

THE DIAGNOSIS OF LARYNGEAL CANCER.

To the Editor of THE LANCET.

SIR,—Mr. Layton has evaded my question as to why my cases illustrated by lantern slides of microscopical sections "afforded a strong argument against biopsies." The cases illustrated the correction of erroneous clinical diagnoses by means of the microscopical examination of portions of tissue removed for the purpose. The assurance afforded by the unmistakable evidence of the microscope led to the prompt adoption of energetic treatment and the preservation of lives which would otherwise have inevitably been lost. Mr. Layton may have justification for his objection to microscopical biopsies, but surely not founded on these cases.

I am, Sir, yours faithfully,

London, Nov. 11th, 1929. JAMES DUNDAS-GRANT.

AVERTIN ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—I hope you will allow me to draw attention to some errors and omissions in your report of my paper on Avertin (THE LANCET, Nov. 9th, p. 979). Firstly, when speaking of the strengths of the solutions used I tried to make it clear that it is the manufacturers who now recommend a 2·5 per cent. in preference to a 3 per cent. solution on the grounds that absorption from a 2·5 per cent solution is more even and gradual but that I preferred the stronger solution for children as the smaller quantity of fluid to be injected is more readily retained by them. Secondly, the sentence beginning "fatal cases" misrepresents me, for only one death occurred in my series of 106 administrations, and I gave reasons for my belief that avertin was not responsible.

The omissions are more serious; no mention is made of the importance of testing the solution for impurities before injection, although this was emphasised. Again, no mention is made of the need for care in dosage, although a considerable part of my paper was devoted to the discussion of this essential; the result is that I am reported as saying that avertin is "a safe means of induction," whereas my statement was that it is safe if used in the doses recommended by Prof. Eichholtz.

I am, Sir, yours faithfully,

FRANCIS SHIPWAY.

York-terrace, N.W., Nov. 8th, 1929.

GENERAL MEDICAL COUNCIL ELECTION.

To the Editor of THE LANCET.

SIR,—Will you grant me the courtesy of your columns to convey to the Registered Medical Practitioners of Scotland my thanks for the renewed expression of their confidence. I shall do my best to deserve it.

I am, Sir, yours faithfully,

Edinburgh, Nov. 11th, 1929. NORMAN WALKER.

ELECTRICAL TREATMENTS IN ACUTE CONDITIONS.

To the Editor of THE LANCET.

SIR,—It is a matter for regret that most electrotherapeutists find difficulty in expressing their thoughts in recognised technical terms, and that they disregard directly appreciable or simple phenomena while in search of explanations for others. The lure of the fantastic seems to divert them from more widely accepted and plausible theories.

On reading Dr. Heald's article in your last issue (p. 974) I could not help feeling shocked at some of his statements and I am loth to let them pass unchallenged. It seems to me that, in a number of ways, the writer of the article on "Electrical Treatments in Acute Conditions" has confused causes and effects. He states that diathermy current is closely allied to the wireless wave. This is true inasmuch as a diathermy machine under requisite conditions may be made to emit electromagnetic waves of the wave-length employed in wireless. Rapidly oscillating electric fields can be made to cause ethereal disturbances and well-tuned circuits will convert these back to oscillating currents; but when diathermy apparatus is employed for electrotherapeutic purposes, the machine is used to create, in the patient's tissues, a rapidly oscillating field. It is conceivable that a small portion of electrical energy is converted into radiant energy of wireless wave-length, but it is doubtful whether those could be reconverted into electrical energy.

That heat is produced in this field is unquestionable, and that a number of phenomena attend this increase of temperature in the living tissues submitted to it cannot be doubted. All changes capable of being accelerated, whether physical, chemical, or biological, are accelerated by an increase of temperature. The viscosity of fluids is lowered, cellular activity is stimulated, and defensive processes, such as phagocytosis, antibody formation, bactericidal power, enzyme actions, &c., which generally have an optimum temperature above the normal body temperature, are stimulated. Why in the face of the extraordinary versatility of this physical agent, heat, should it be necessary to elaborate the fantastic theories which I take the liberty to quote:—

> "It has long been taught that diathermy acts only by heat, and has no specific action due to its wave-length. The very name of diathermy supports this theory. As I have said, however, diathermy currents are practically identical with ordinary wireless waves (one machine I have has a wave-length of 365 metres). This current, therefore, does not primarily belong to the heat, or infra-red, portion of the *ether scale*, but it does make itself manifest as heat after it has been *absorbed*, and to appear as such these waves must have first been absorbed and then changed to *heat waves*" (italics mine).

As it is not usual to classify currents among the electromagnetic waves or for them to be "absorbed," the last sentence is quite incoherent. Nor is it easy to understand the relevance of the sentence in brackets. Perhaps adequate understanding of such terms as "ether scale" and "heat waves" or the possibility of including oscillating currents among forms of radiant energy offer the clue to this. It matters little whether the body tissues act as a resistance to the current, or partly as leaky condensers, or whether actual ionic displacement takes place as opposed to pure electronic motion. I cannot help feeling that it is far more satisfactory to interpret the beneficial action of diathermy as the result of accelerated physiological activity following an increase of temperature.

In another paragraph Dr. Heald talks of "heat waves" given out by hot-water bottles and fomentations, and argues that diathermy currents differ from these in that "their initial structure is such that they can pass through all kinds of tissues whether conducting or non-conducting, and where they meet relatively poorly conducting tissues, such as bone, their change into heat waves is more rapid than in such vascular structures as muscles." Here one has great difficulty in making out whether he is talking of the wireless waves, supposed to be produced by the oscillating currents, or the current itself. If one was meant to understand the former, I venture to say that the different resistances of tissues would have very little influence on the amount of heat produced, unless some obscure phenomenon of cellular resonance were to interfere. To advance theories on this subject, without further evidence of this occurring, would be speculating and inviting further criticism. On the other hand, if Dr. Heald means that diathermy currents produce more heat in bones than in other tissues, he is right, always providing he does not give the current an alternative path of less resistance.

I am, Sir, yours faithfully,

Wimpole-street, W., Nov. 11th, 1929. PH. BAUWENS.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

ACCIDENTS IN MINES.

IN the House of Commons on Nov. 6th Mr. GORDON MACDONALD moved:

> "That this House deplores the heavy loss of life and the large number of non-fatal accidents in coal mines, and is of opinion that every possible step should be taken without delay to secure the fullest protection possible to those engaged in this dangerous industry."

He said that in the two years preceding the extension of working hours the rate per 1000 of fatal accidents was 1·11 in 1924 and 1·15 in 1925. In 1927—the year after the Eight Hours Act was passed—the figure was 1·25 and in 1928 it was 1·18. That showed that the Government had made things worse as regarded the number of accidents. The only hope of dealing effectively with the matter was to reduce the working day to the point at which it stood before the passing of the Eight Hours Act. In 1924 the non-fatal accidents numbered 11,937; in 1925 they were 10,622. The rate per 1000 worked out for 1924 at 158·8 and for 1925 159·3. In the two years immediately following the total was 9338 and 8347 respectively and the rates per thousand were 167·2 and 170. Between 1925 and 1928 there had been an increase of 11 per 1000 in non-serious accidents, and the same applied to serious accidents. He did not say that the increase per 1000 in the number of accidents was a direct result of the eight hours working day, but he suggested that the increased working hours was a matter which should be carefully examined in this connexion. Apart from the injuries to the body of miners caused by accidents they had to deal with the very serious menace known as nystagmus. At present there were 9775 men in this country suffering from that disease, which endangered the physical and nervous strength of every sufferer. It was about time that something was done in regard to these men. When they made a slight recovery and were able to do some light work they found themselves faced with total unemployment. The bulk of the regulations governing the life of miners to-day were made in 1911. Since that date mining life, especially underground, had been revolutionised as a result of the introduction of mechanism. The Government might consider seriously taking legislative action to deal with the situation. They might, if necessary, appoint a committee of inquiry for the purpose of consolidating all the statutory orders since 1911 and then produce an up-to-date Mines Regulation Act.

Mr. ROWSON seconded the motion.

Dr. ETHEL BENTHAM said there was no doubt about the enormous incidence of accidents, both fatal and otherwise, on the mining community. She was not an expert in the

management of mines, but she had found during her fairly long experience that in many trades piece rates were responsible, not only for accidents, but for ill-health among the workers as well as for a great deal of indifferent work. The workers in every trade with which she was conversant—and she knew a good deal about the conditions in many of them—always said that accidents occurred late in the working day. They ought to consider very carefully the effects of over-long hours in such a laborious, difficult and dangerous trade as mining. She thought that most members of the medical profession—she could not speak for the whole—agreed that it was the posture and the lighting conjointly which were the cause of nystagmus, and it seemed to her that it would be possible by concerted action to get really disinterested evidence on that matter and to take measures to put an end to a disease which was quite preventable if they were ready to consider the lives of men, women and children, and the national advantage of good health instead of the narrow financial aspect of the matter which precluded sufficient money being spent on the prevention of the disease and on experiments with a view to such prevention.

The Government's Reply.

Mr. BEN TURNER, Secretary for the Mines Department, replying for the Government, said that the recorded accidents in 1928 were less than in the years before, but he had no such comfort to offer for this year. Up to 1929 the numbers were the lowest since 1899, but during the first nine months of this year they had gone back to the old rate of over 1000 persons killed each year. It was also certain that there were many unrecorded accidents. It was true that the death-rate in our pits was less than in America and Germany. That, however, was little comfort to those who lost their breadwinner, and all parties in the State were anxious, if possible, to assist in the reduction of these accidents. He wondered sometimes if the unsettled economic and other conditions in the coalfields had added to the heavy loss of life and limb. He was quite certain that there had been no slackness in the Mines Department with regard to protective measures. The rate, however, was so terrible that every effort must be made to bring about a great reduction. The present strength of the mining inspectorate was 106, including eight special inspectors who devoted the whole of their time to the inspection of pit ponies. The number of mines in 1922 was 2911 and the employees 1,162,754. Last year the number of mines was 2539 and the number of employees 951,000. In 1922 the number of inspections was 18,941; last year it was 21,748. The average number of inspections of every mine per year was 7·2 underground and 1·5 on the surface. He was certain that the new electrical development in mines called for more skilled electrical inspectors. Since 1912, when 500,000 horse power was being applied to pits, the amount had grown to 1,750,000 horse power. There was a great risk in the use of this new agency, and it required attention. To relieve the situation he hoped to appoint four additional electrical inspectors of mines. The difficulties in the way of revising legislation for the mines were twofold. In the first place, the various sections of the industry were all too preoccupied with labour and economic conditions to give it the detailed attention and constructive criticism which the Department needed. In the second place, the Government were so fully occupied with prospective legislation in this and other matters that it was impossible to overcome delay. In connexion with the code of regulations for first-aid and ambulance work he thought that delay had been caused by the procedure which was not as speedy as it should be. The practice had been to send the draft regulations to the Mining Association; then they came back to the Department, which sent them to the Miners' Federation. He saw no reason why the two sides of the industry should not meet and decide upon the best regulations instead of passing a draft backwards and forwards as had been done hitherto. Many accidents could be avoided with more care and expenditure—care on the part of the management, the officials and the men, and expenditure on the part of the owners. Accidents arising from falls of roof and from haulage were the heaviest in each week's return, and this had caused the Mines Department, through the Mines Research Board, to appoint a highly qualified specialist to organise and superintend further experimental work on these subjects and generally to assist the Safety in Mines Research Board in regard to the important mechanical problems in mines. The Department was doing much in the direction of propaganda. He hoped also that science would succeed in producing a lamp giving a safe light with a bigger candle power, which would preserve the miner's eyesight and help to make his production better. In conclusion Mr. Turner assured the House that all the suggestions put forward in the debate would receive careful consideration with a view to the promotion of safety and comfort for men in the coal pits.

The motion was agreed to.

HOUSING BILL.

On Monday, Nov. 11th, Sir R. GOWER presented a Bill to make better provision for the improvement of unhealthy areas; to provide adequate compensation for business disturbance; and to make certain consequential amendments to the Housing Act, 1925.

ILLEGITIMATE CHILDREN IN SCOTLAND.

On Nov. 12th the Duchess of ATHOLL obtained leave to bring in a Bill to amend the law regarding the duration and recovery of aliment for, and the custody of, illegitimate children in Scotland. She explained that the Bill would make the father liable for aliment until the child was 16. The mother was also given power to make application for the expenses of her confinement as well as for aliment within three months of her expected confinement, although if the case were defended by the father the decree could not become operative until after the birth of the child.

Among the backers of the Bill was Major ELLIOT.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 6TH.

Rheumatic Diseases and Pulmonary Tuberculosis in the Navy.

Dr. VERNON DAVIES asked the First Lord of the Admiralty if he was aware that in 1927, out of a total of 20 men invalided for rheumatic fever, 17 had served for less than two years and that out of a total of 79 men invalided for organic heart disease 40 had served for less than two years; and if he could offer any explanation for this high incidence of rheumatic diseases.—Mr. ALEXANDER replied: The answer to the first part of the question is in the affirmative. It is not considered that the incidence of rheumatic diseases is unduly high when consideration is given to the early age at which recruits are received into the Navy.

Dr. VERNON DAVIES also asked how many of the 159 men invalided from the Service in 1927 for pulmonary tuberculosis were granted disability pensions; in how many cases was the disease held to be attributable to the conditions of service; and how these numbers compared with those of the previous three years, expressed as a percentage of the number pensioned to the total number of cases.—Mr. ALEXANDER replied: The number of men invalided in 1927 for tuberculosis was 180, and pensions on the attributable scale were granted in 18 cases, or 10 per cent. of the total. This compares with 3 per cent. in 1926, 1 per cent. in 1925, and 3 per cent. in 1924. In a considerable number of cases pensions on the non-attributable scale were granted where the men had sufficient service to qualify.

Dr. DAVIES: Will the right hon. gentleman observe that the percentage of pensions granted has increased rapidly this year, possibly to the too great restrictions on previous years, and would he be prepared to look over some of the back cases to see if the present conditions on which pensions are granted are applicable to cases which have been previously refused.

Mr. ALEXANDER: I shall be glad to consider any representations of a specific character made to me. It is obviously difficult to go back on decisions which have been made under regulations which existed at that time, but I will consider it.

Mr. HORE-BELISHA: While the figures show an improvement under the revised rules, is not the necessity for an appeal tribunal still apparent?

Mr. ALEXANDER: As far as I have been able to look into the matter there is a considerable improvement in the method in which these cases are dealt with, but I have had no strong case put to me yet for an appeal tribunal, and, in fact, I am not at all sure that in the regular Service cases an appeal tribunal would always be to the advantage of the men. I hope that the hon. Member will consider that.

Vaccination of Naval Personnel.

Mr. MOSES asked the First Lord of the Admiralty how long it had been the practice to carry out quinquennial revaccination, as necessary of all personnel in the Navy; whether such revaccinations were compulsory; and whether he proposed to make any changes in the Navy regulations relating to the vaccination of naval recruits and dockyard apprentices under the age of 19 years who had not previously been vaccinated, in view of recent cases among the civil population of post-vaccinal encephalitis.—Mr. ALEXANDER replied: It has been the practice to carry out quinquennial revaccination of personnel of the Royal Navy, when going abroad, for many years. An order was issued on Sept. 7th, 1928, that revaccination of active service personnel should be carried out every five years (Admiralty Fleet Order, 2216/28). No punishment or penalty is incurred for declining revaccination on conscientious or other grounds, but precautions are taken to prevent men not

revaccinated from becoming a danger to the Service by landing in ports where there is danger of contracting small-pox (King's Regulations and Admiralty Instructions 1417/12). It is not proposed at present to make any changes in the Navy regulations relating to the vaccination of Naval recruits, in view of the fact that these young men are likely to be exposed to the danger of infection by the severe Oriental type of small-pox as soon as they go to sea. The regulations relating to the vaccination of dockyard apprentices are under consideration.

Civil Service and Scientific Research.

Lieut.-Colonel FREMANTLE asked the Prime Minister if it was the intention of H.M. Government, in appointing the Royal Commission on the Civil Services, to review the status and functions of the large body of scientific and technical experts engaged in the Civil Services, with a view to the furtherance of scientific knowledge, methods, and research of those services; and if, seeing that there was no representative of science nor anyone engaged in the application of science to the needs of the community, he would consider the addition to the Royal Commission of a due proportion of such representatives.—Mr. SNOWDEN, Chancellor of the Exchequer, replied: The Royal Commission has been appointed to inquire into and report on the structure and organisation of the Civil Service, conditions of employment of Civil Servants, and conditions of retirement from the Civil Service. Its terms of reference have been widely drawn and it will be for the Commission itself to determine the extent to which the various subjects within the scope of the reference can profitably be reviewed. I am satisfied that the Commission as now constituted is well adapted to the purposes of the inquiry and I am not prepared to enlarge its numbers.

Colonial Veterinary Scholarships.

Mr. ORMSBY-GORE asked the Under-Secretary for the Colonies whether the proposed school of tropical veterinary medicine, recommended by Lord Lovat's Committee, would now be established; and what steps were being taken to improve the recruitment and training of veterinary officers for service under Colonial Governments.—Mr. LUNN, Parliamentary Under-Secretary for the Colonies, replied: A decision on the recommendation of Lord Lovat's Committee on the Colonial Veterinary Services for the establishment of a school of tropical veterinary science was deferred until the Report of the Departmental Committee on the reconstruction of the Royal Veterinary College at Camden Town was available. This report has now been issued, and the question will be further considered in the light of the recommendations contained in it. It is hoped that it will be possible to bring the proposed Colonial Veterinary Scholarship Scheme into operation next year. All the Colonial Governments which were asked to contribute towards the expenditure involved have agreed to do so, and the Colonial Development Advisory Committee are now considering an application for a grant from the Colonial Development Fund to meet the one-third of the annual cost of the scholarships which was the portion that Lord Lovat's Committee recommended should be provided from United Kingdom funds.

Motorists and Third-party Insurance.

Sir GERVAIS RENTOUL asked the Minister of Transport whether he was prepared to introduce legislation for the compulsory third-party insurance of all motor vehicles.—Mr. HERBERT MORRISON replied: The desirability of requiring that the driver of a motor vehicle should obtain cover against any legal liability that may attach to him in respect of the death of, or bodily injury to, another person will be most carefully borne in mind in connexion with any Road Traffic Bill which I may be in a position to present to Parliament.

Stationary Cars and Road Accidents.

Sir ALFRED KNOX asked the Minister of Transport if he would, in order to prevent a frequent cause of accidents, insert in the Transport Bill the provision that cars drawing up at the side of the road after lighting-up time must be pointed in the same direction as the traffic on that side.—Mr. H. MORRISON replied: I have under consideration the inclusion in any legislation that may be introduced to deal with road traffic of a provision making it an offence to leave a motor vehicle in a position dangerous to other traffic using the road. In the case of a well-lighted street a general provision of the nature suggested by the hon. Member might cause unnecessary inconvenience, and even danger, owing to the necessity of reversing vehicles in order that they might point in the proper direction.

Proposed Extension of Milk and Dairies Order.

Mr. LAWTHER asked the Minister of Health if he would take the necessary steps to extend the Milk and Dairies Order, 1926, to the housing of calves and young cattle, as it was held that this might help towards preventing the spread of tuberculosis.—Miss LAWRENCE, Parliamentary Secretary to the Ministry of Health, replied: Although my right hon. friend agrees as to the importance of the proper housing of calves and young cattle, it seems to him that the safeguarding of the health of such animals is too remote from the objects of the Milk and Dairies Order to justify him in extending the provisions of that Order in the manner suggested.

Insurance Committees and Health Lectures.

Dr. MORGAN asked the Minister of Health how many insurance committees had taken advantage of the provisions of the National Health Insurance Acts and instituted lectures on health and disease prevention for the insured persons in their district; how many such lectures had been given this year and at what cost; and whether any steps were proposed to remind insurance committees of their obligations in this respect.—Mr. GREENWOOD replied: I am not in possession of any precise figures on the points raised in the first two parts of the question; but I am aware that certain committees have undertaken work of this character. It is not obligatory upon committees to do so, and I think they are already fully acquainted with their statutory powers.

Care and Management of Infants.

Dr. HASTINGS asked the Minister of Health whether he would consider the presentation of a booklet through the local authorities on the care and management of infants to the parents of every child at the time that its birth was registered.—Mr. GREENWOOD replied: It is the common practice for local authorities to arrange for the distribution of booklets of this kind to parents by health visitors and at infant welfare centres, and I do not therefore consider it necessary to take the action suggested by my hon. friend.

Leaflets on Treatment of Disease.

Dr. HASTINGS asked the Minister of Health whether his attention had been called to the amount of disease which was preventable or readily curable if treated in its earliest stages; and whether he would consider the advisability of the provision of leaflets dealing with human disease, similar in nature to the leaflets provided by the Ministry of Agriculture regarding the diseases of animals and plants.—Mr. GREENWOOD replied: I am aware of the facts referred to in the first part of the question. My Department have, from time to time, issued memoranda dealing with the prevention and treatment of various diseases, and further memoranda of the same character will be issued as occasion requires. These memoranda are on sale to the public, but they are primarily designed for the information of local authorities and their officers, and in some cases may conveniently form the basis for the popular leaflets or public announcements issued by such authorities.

Vacancies for Colonial Veterinary Officers.

Mr. ORMSBY-GORE asked the Under-Secretary of State for the Colonies if he would state how many unfilled vacancies now existed for veterinary officers and veterinary research officers in the Colonies, Protectorates, and Mandated Territories.—Mr. LUNN replied: Apart from the consequential vacancies which will be caused by promotions now under consideration there exists at the present time one vacancy for a veterinary officer.

Pensions of Indian Medical Officers.

Mr. WEDGWOOD BENN, Secretary of State for India, in reply to Major GRAHAM POLE, stated that the number of officers of the Indian Medical Service who drew pensions through the India Office chargeable to Indian revenues during the year ended March 31st, 1929, was 551, and the amount paid during the year in respect of these pensions was £310,969.

THURSDAY, NOV. 7TH.

Cancer among Industrial Workers.

Mr. PHILIP OLIVER asked the Home Secretary whether he had yet been able to take any and, if so, what steps to facilitate the investigation at present being carried out by the London Cancer Hospital into the incidence of the disease of cancer of the bladder among workers in aniline factories.—Mr. CLYNES replied: Yes, Sir. I am arranging for the coöperation of the Medical Inspectorate of the Factory Department in the investigation of the industrial history of cases of this disease; and I am also consulting the Registrar-General on the question of facilitating the supply of the statistical information required.

Escape of a Mental Patient.

Mr. LANG asked the Home Secretary if his attention had been drawn to the escape from Devizes Mental Hospital of a patient named Littleton Watson; if he was aware that this patient was transferred to Devizes from Broadmoor criminal lunatic asylum a year ago; and if he would

state the conditions under which such transfers were made.—Mr. CLYNES replied: I have seen a newspaper report. The escape of a patient who is not a criminal lunatic would not be reported officially to me. The patient in question, while under sentences for stealing and false pretences, was certified insane and removed to Broadmoor, as a criminal lunatic. When his sentences expired in October, 1928, he ceased to be a criminal lunatic; but as he was still insane, he was recertified under the ordinary lunacy law and received into the Devizes Mental Hospital. This is the course prescribed by statute.

Experiments on Living Animals.

Mr. FREEMAN asked the Home Secretary if he would give instructions that a record be kept of the kind of animals used for each experiment in vivisection, the total period during which each animal was experimented upon, and the actual time during which it suffered any kind of pain; and that this information be published in future reports.—Mr. CLYNES replied: No, Sir. I do not think that the information suggested, even if it were obtainable, would serve any useful purpose. So far as the question of pain is concerned, I would remind my hon. friend that stringent conditions are imposed in all cases in which the experiment is performed without anæsthesia or the animal is allowed to come out of the anæsthesia.

Health Conditions in Artificial Silk Works.

Mr. KELLY asked the Home Secretary what action had been taken to improve the health conditions in the spinning rooms of artificial silk factories, particularly in the matter of eye injury and lung trouble; and if any prosecution had taken place against firms in this industry during the last six months.—Mr. CLYNES replied: The matter has continued to receive the close attention of the inspectorate, and the further conference which I mentioned in my reply to my hon. friend on July 25th last was held last month. It was agreed that the remedy for the special trouble arising in the spinning rooms is to secure efficient ventilation, and the inspectors and occupiers are concentrating on this. In many cases improvements have been effected with beneficial results. The conditions in all these works will continue to receive close supervision. One prosecution has taken place during the last six months, the offences being failure to ventilate the churns and failure to notify cases of poisoning by carbon bisulphide. Substantial penalties were imposed.

Supply of Milk at Maternity Centres.

Mr. FISON asked the Minister of Health whether any applications had been made by local authorities for approval of additional expenditure for providing increased allowances for milk at maternity centres; whether such applications had been granted; and what was the amount of such additional expenditure approved.—Mr. GREENWOOD replied: Sixteen such applications have been received since June last up to the present date, of which ten have been wholly granted and one in part. The remaining five applications are under consideration. The additional expenditure already approved amounts to £1513, while the total amount under consideration is £1973.

Nursery Schools.

Dr. HASTINGS asked the President of the Board of Education how many of the 29 existing and 15 contemplated nursery schools were open-air schools; and whether he proposed to sanction any further nursery schools not of the open-air type.—Sir CHARLES TREVELYAN replied: Of the 29 existing nursery schools, 23 are open-air schools and nearly all the others have good open-air facilities. The importance of securing the provision of a largely increased number of nursery schools is so great that some latitude must be allowed, as, for example, where it is proposed to adapt an existing building for the purpose, but the majority of the new schools will be of the open-air type.

Public Cleansing in London.

Major KINDERSLEY asked the Minister of Health whether the Departmental Committee appointed to consider the Report of an investigation into the public cleansing service in the administrative county of London had yet made its Report; and whether that Report would be published.—Mr. GREENWOOD replied: The work of the Departmental Committee has been delayed by the unfortunate death of its chairman, Sir John Gatti, to whose public services, though I differed from him on many matters, I should like to pay my tribute. A new chairman is to be appointed, and I hope that the Committee will find it possible to make an early Report, which will pave the way to dealing with this pressing problem on effective and comprehensive lines. I see at present no reason why their Report should not be published. I can assure the House that the Government are impressed with the necessity for action, and I propose to confer with the Committee at an early date. I do not think that it would help matters to add to the Committee representatives of areas in which dumps are situated. I understand that the Committee have already considered a large part of their problem and have visited some of the dumps.

Non-Pulmonary Tuberculosis.

Dr. HASTINGS asked the Minister of Health the number of deaths from tuberculosis of other organs than the lung that occurred in 1928; and if any estimate had been made of the number of these deaths that resulted from infection by tuberculous milk.—Mr. GREENWOOD replied: Of the registered deaths in England and Wales in 1928 classified to tuberculosis, 6824 were assigned to forms of the disease other than pulmonary tuberculosis. I am advised that there is no information available on which to base any reliable estimate of the number of these deaths which were due to infection by tuberculous milk.

Derating and Voluntary Hospitals.

Mr. WARDLAW-MILNE asked the Minister of Health whether it was the intention of the Government to introduce legislation extending the benefits of derating to the voluntary hospitals.—Mr. GREENWOOD replied: It is not at present the intention to introduce such legislation. It would not be practicable to propose the total or partial exemption of hospitals from rating without at the same time considering the claims for similar exemption of other charitable and public institutions.

Lunacy Law Reform.

Viscount ELMLEY asked the Minister of Health whether he intended to revise the Lunacy Laws; and, if so, when the proposals would be brought forward.—Mr. GREENWOOD replied: I hope that it may be practicable in the near future to introduce a Bill to effect certain improvements in lunacy law and administration.

Government and Slum Clearance.

Mr. ALBERY asked the Minister of Health whether he anticipated that the Government's scheme for slum clearance was likely to be in operation within the next 12 months.—Mr. GREENWOOD replied: Yes, Sir.

Lieut.-Commander KENWORTHY asked the Minister of Health the total number of slum clearance schemes carried out during the years 1925 and 1928 inclusive; and what was the total number of persons rehoused under these schemes.—Mr. GREENWOOD replied: In the period from 1925 to 1928 work was in progress on 118 slum schemes, some of which had been started prior to 1925. The total number of people to be rehoused in connexion with these schemes was 71,413. In the case of 61 schemes the work of rehousing was completed during the period and provided accommodation for 20,745 persons.

Dr. MORGAN asked the Minister of Health if he was aware that many persons in the south-east of London were being summoned or being prosecuted for overcrowding; and whether, in view of the prevailing conditions, over which these poor people had no control, he would seriously consider the advisability of issuing a circular letter to metropolitan local authorities requesting them to delay any such proceedings pending the introduction of his promised Slum Clearance Bill.—Mr. GREENWOOD replied: My hon. friend has brought some particulars to my notice. I have no power to give directions to the local authorities to refrain from action in cases which they consider they should bring before the courts.

Medical Services in Naval and Military Forces.

Dr. VERNON DAVIES asked the Secretary to the Treasury what progress had been made by the joint medical services committee of the Navy, Army, and Air Force in establishing a common system of costing with regard to hospitals.—Mr. PETHICK-LAWRENCE replied: The experiments which have been tried for the past two and a half years are still in progress; but it has not yet been found possible to devise a common form for use in all the Services which will give satisfactory results.

Pulmonary Tuberculosis in the Services.

Dr. VERNON DAVIES asked the Secretary to the Treasury if the joint medical committee of the three Service departments and the Ministry of Pensions appointed to inquire into the relationship between conditions of Service life and pulmonary tuberculosis had come to any decision; if any report had been submitted; and, if so, if it would be available for the information of the House.—Mr. AMMON replied: The committee have reported, and as a result of certain recommendations made by them various steps are being taken by the Departments concerned. The answer to the last part of the question is in the negative.

Hysteria in Dogs.

Colonel CLIFTON BROWN asked the Minister of Agriculture if he was aware that the comparatively new disease of

hysteria was seriously affecting sheep-dogs and other dogs in this country; and what steps his department was taking to investigate the cause of this ailment and to find a cure.—Dr. ADDISON, Parliamentary Secretary to the Ministry of Agriculture, replied: I am aware of the occurrence of hysteria among dogs in this country, and although no cases in sheep-dogs have been brought to my notice, they are probably susceptible to the condition. Research into the disease is in progress at the Royal Veterinary College.

The Royal Veterinary College.

Captain CROOKSHANK asked the Minister of Agriculture if he could make any statement regarding the future of the Royal Veterinary College.—Dr. ADDISON replied: My right hon. friend has received the Report of the Committee which was appointed by his precedessor to consider the whole problem of the reconstruction of the Royal Veterinary College. The Report raises important and difficult questions which are now receiving his careful consideration, and a further statement on the subject will be made in due course.

Sounding Motor Horns at Night.

Colonel HOWARD-BURY asked the Minister of Transport whether he was aware that in Paris during certain hours of the night no motor horns were allowed to be sounded; and whether he would put in force a similar order in the London metropolitan area.—Mr. H. MORRISON replied: Although traffic conditions in London differ materially from those prevailing in Paris, I am having inquiries made with a view to ascertaining whether the principle adopted in Paris of prohibiting the sounding of motor horns during certain hours of the night in certain parts of the city would be suitable for experimental trials in some portion of the metropolitan area.

Voluntary Hospitals and Recovery of Expenses.

Major EDMONDSON asked the Minister of Transport whether his attention had been called to the position of voluntary hospitals with regard to their right to recover expenses in cases where the personal damage suffered by patients had been assured against; and whether he was prepared to take steps to introduce legislation, if necessary, to remedy the present position.—Mr. H. MORRISON replied: I am aware that the voluntary hospitals incur considerable expenditure in the treatment of motor accident cases, but I do not think that it would be practicable or desirable to provide that they should have a special legal claim to a proportion of insurance moneys in those cases where the injured person is compensated out of such moneys.

MONDAY, NOV. 11TH.

The Tuberculosis Order, 1925.

Mr. LAWTHER asked the Minister of Agriculture if he would give the figures of the number of animals slaughtered under the Tuberculosis Order, 1925, in the counties of Northumberland, Durham, Cumberland, and the North Riding of Yorkshire for the year ending December, 1928; and if he was satisfied that proper precautions existed to prevent those carcasses being used for human consumption.—Mr. BUXTON replied: The number of animals slaughtered in the counties named during 1928 under the Tuberculosis Order of 1925 was: Northumberland, 92; Durham, 210; Cumberland, 152; and North Riding, 320. The carcasses of animals slaughtered, for which compensation is paid to the owner, become the property of the local authority, and the Order of 1925 (No. 2) provides that no parts of such carcasses shall be removed for consumption without the written permission of the medical officer of health or other competent officer of the sanitary authority. I am therefore satisfied that the proper precautions exist.

Grants for Maternity and Child Welfare.

Lieut.-Colonel HENEAGE asked the Minister of Health what grant he proposed to make towards maternity and child welfare services.—Miss LAWRENCE, Parliamentary Secretary to the Ministry of Health, replied: It is estimated that the total grant payable during the present financial year in respect of these services will be about £1,170,000, as compared with £1,071,500, the total grant paid last year.

Asbestos Workers and Workmen's Compensation.

Mr. STAMFORD asked the Home Secretary whether he had received a report of the coroner's inquest on Abraham Jowett, a charge hand at Messrs. J. W. Roberts' asbestos works at Armley, Leeds, whose death was certified as being due to acute lobar pneumonia, contributed to by fibrosis due to asbestosis; and whether, in view of the risks to which workers in asbestos were exposed, he intended to schedule the disease under the Workmen's Compensation Acts.—Mr. SHORT, Under-Secretary to the Home Office, replied: Yes, Sir. My right hon. friend has received a report on this case from the inspector who attended the inquest. The risks to which workers in asbestos are exposed have been the subject of a comprehensive inquiry by the Factory Department, and my right hon. friend hopes to be in a position very shortly to consider what further precautions are necessary for the protection of the workers. The question of compensation will be considered at the same time. At the present moment he cannot make any statement on the subject.

Noxious Fumes from Cement Works.

Mr. MILLS asked the Minister of Health if he had received complaints of noxious and vegetable-destroying fumes from cement works on the banks of the River Thames; and, if so, what action was contemplated.—Miss LAWRENCE replied: Complaints have been received regarding the emission of dust. An inspector of my department has made investigations. In one case, steps have been taken to reduce the emission and the matter is continuing to receive attention. In the other case, the inspector reported that he was satisfied as to the result of the steps which had been taken.

Mr. MILLS asked the Home Secretary the measures taken to prevent nuisances by wasteful fumes from cement factories; and the comparative waste as between German works and British works.—Miss LAWRENCE replied: The emission of fumes is usually kept well in hand; the emission of dust gives more trouble. A good deal has been done and experiments are being conducted for dealing more effectively with the problem. Inspectors of my Department are in close touch with what is being done. I cannot at present say how works in this country compare with those in Germany.

Wards at Broadmoor Asylum.

Mr. OLIVER BALDWIN asked the Home Secretary whether he was aware that at Broadmoor Criminal Lunatic Asylum there was a special ward where prisoners of the richer classes were segregated; and, if so, whether he would discontinue this method of class distinction.—Mr. CLYNES replied: There is no such special ward at the asylum.

Blind Persons in England and Wales.

Mr. CLYNES, Home Secretary, informed Mr. KELLY that on March 31st last the number of blind men and women registered under the Blind Persons Act, 1920, in England and Wales was 48,408.

TUESDAY, NOV. 12TH.

Properties in Insanitary Areas.

Sir ROBERT GOWER asked the Minister of Health the number of persons who owned properties in the respective areas represented by local authorities to be insanitary, schemes relating to which had been submitted to him and awaited his approval, and the number of persons owning businesses in such areas respectively.—Mr. GREENWOOD replied: The following statement gives the information desired:—

Local authority.	Scheme.	Persons owning properties in the area and lessees of such properties.	Persons carrying on businesses in the area.
Metropolitan Borough Councils—			
Bethnal Green ..	Digby Street.	13	4
Bermondsey	Rotherhithe Street (West)	21	21
Wandsworth ..	Wandsworth Plain.	35	28
County Borough Councils—			
Bristol	Dings Area.	42	13
Exeter	No. 4 area reconstruction scheme.	5	6
Ipswich	Currier Lane, &c.	55	12
West Bromwich ..	Cooper Hill Street, &c.	32	None so far as is known at present.
Borough Council—			
Wisbech	Carpenter's Arms Yard, &c.	17	5
Urban District Council—			
Knaresborough ..	Beech Hill.	6	3

Slum Clearance Schemes.

Sir ROBERT GOWER asked the Minister of Health what schemes relating to alleged insanitary areas had been submitted for his approval by local authorities during the past five months; and what his decision in each case, respectively

had been.—Mr. GREENWOOD replied: During the last five months schemes of this kind have been submitted by the corporations of Bethnal Green, Bristol, Wandsworth, and Wisbech. These schemes are still under consideration.

Medical Examination of Young Mining Workers.

Dr. VERNON DAVIES asked the Secretary for Mines if he proposed to take steps to ensure that all young persons under 18 years of age entering the mining industry should be medically examined for fitness before starting work.—Mr. BEN TURNER replied: I understand that medical examination of young persons is one of the matters now under consideration in connexion with a new Factories Bill. When this Bill has become law I will consider whether any change is necessary in mining legislation to bring it into conformity with factory legislation in this respect.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—As the result of the Final Examination held from Oct. 7th to 30th the following candidates were approved in the undermentioned subjects, but are not eligible for diplomas:—

Medicine.—A. H. Baker, Manchester; J. C. Banerjea, Guy's; A. Barber, St. Bart.'s; K. C. Bhattacharyya, St. Thomas's; R. O. Brooks, Manchester; D. S. Chowdhary, London; R. E. S. Dalliwall, Cambridge and St. Bart.'s; E. Dikshitulu, Madras and Charing Cross; Sheila J. Ferguson, King's Coll.; E. C. I. Foot, Sheffield and St. Bart.'s; J. F. Galpine, Leeds; R. K. Goyal, London; Charlotte Gray, Univ. Coll.; R. S. Harrison, Guy's; Aureval Heaton, Royal Free; Katherine M. Heberlet, Univ. Coll.; Gladys M. Herbert, St. Mary's; G. L. Johnson, Columbia; E. O. Lakey, Univ. Coll.; P. A. E. Lansel, Middlesex; A. Liberis, St. Bart.'s; K. M. Macleod, Edinburgh; J. S. MacVine, St. Bart,'s; R. S. Mann, Univ. Coll.; E. K. Menon, Birmingham; B. B. Nanavatty, Royal Free; F. J. Napier, Guy's; G. L. Ormerod, Cambridge and St. Thomas's; C. H. Pauli, Bristol; S. L. Rikhye, London; S. L. Robert, Birmingham; B. P. Robinson, Manchester; L. K. Robson, Guy's; J. Ross and H. K. Said, Charing Cross; J. Sakula, Middlesex; R. L. Sethi, London; Edna F. Sheridan, King's Coll.; H. Silverstein, St. Bart.'s; G. H. G. Southwell-Sander, St. Thomas's; R. G. Sowter, Guy's; Ada M. W. Stewart, Univ. Coll.; T. S. Stone and K. T. Taskar, London; P. H. Taylor, King's Coll.; Rose E. Williams, Royal Free; R. A. Wilmshurst, St. Thomas's; G. R. H. Wrangham, St. Mary's; and F. C. A. Wright, King's Coll.

Midwifery.—G. L. Alcock, St. Thomas's; Katharine M. Allen, King's Coll.; S. Amir-ud-din, Lahore; W. T. Andrews, St. Thomas's; Lily Arratoon, Royal Free; P. B. Ascroft, Middlesex; W. I. Bain, St. Thomas's; A. H. Baker, Manchester; W. L. H. L. Bell, St. George's; J. N. Bhada, Univ. Coll.; F. K. Boston, St. Bart.'s; A. D. Bourne, St. Mary's; A. E. Bowling, Leeds; Mabel Brewster, Royal Free; W. J. Burgess, St. Bart.'s; M. L. Bynoe, King's Coll.; E. C. Campbell and H. Canwarden, St. Mary's; L. Charney and D. N. Chatterji, London; W. F. Church, St. Bart.'s; D. O. Clark, St. Thomas's; Charlotte A. G. Conway, Royal Free; J. S. Cotman, St. Mary's; W. C. Cresdee, St. George's; H. D. Cronyn, St. Mary's; H. J. Croot, Guy's; R. M. S. Cross and R. E. S. Dalliwall, St. Bart.'s; Elizabeth T. Davies, Westminster; H. L. G. Davies, St. Bart.'s; V. Dellal, Manchester; D. Divine, Guy's; S. Durham, London; J. M. Durr, Guy's; J. J. Eapen, Madras; Sheila J. Ferguson, King's Coll.; Doreen P. Firmin, Westminster; J. P. Flanagan, Liverpool; A. A. G. Flemming, Cambridge and Bristol: P. Frankenberg, St. Bart's; K. Ghosh, Royal Free; E. J. Goldsmith, St. Thomas's; Rebecca Goldstein, Univ. Coll.; R. W. Graham-Campbell, St. Bart.'s; E. R. Greathead, London; Sheila M. Harper, Liverpool; J. O. Harrison, St. Bart.'s; R. S. Harrison, Guy's; J. E. M. Harrisson and R. M. Harvey, London; Katherine M. Heberlet, Univ. Coll.; J. R. Heming, St. Thomas's; J. E. R. Heppolette, St. Mary's; L. Hershfield, Middlesex; J. R. Hindmarsh, Durham; Constance M. Hoare, King's Coll.; R. S. Hodge and Laura M. Hollingworth, Univ. Coll.; S. W. Holmes, St. Mary's; D. W. Hoodless, Charing Cross; H. R. Hovsha, King's Coll.; Eugenie C. Illingworth, Leeds; B. Isaac, St. Mary's; H. B. Jackson, Middlesex; W. J. Johnson, Guys'; M. M. St. G. Johnstone and G. L. Jones, St. Thomas's; I. G. Jones, Univ. Coll.; Alison F. Z. Judd, Royal Free; F. B. Kantzer, Chicago; J. D. Kershaw, Univ. Coll.; J. S. Knox, St. Bart.'s; F. P. L. Lander, Middlesex; G. F. Langley, Bristol; Annie Lawson, Royal Free; S. R. Ledger, King's Coll.; D. H. Le Good, St. Thomas's; G. S. R. Little, St. Bart.'s; L. Lodge, London; J. Loofe, Leeds; V. J. Lopez, St. Mary's; S. H. Lubner, London; Marjorie N. Lunn, Royal Free; G. D. McLean, St. Thomas's; K. M. Macleod, Edinburgh; F. G. Maitland, St. Thomas's; H. S. A. Malik, Bombay; R. W. Malim and C. E. P. Markby, St. Thomas's; J. H. G. Mason, Middlesex; Ruth Milne, Royal Free; W. A. Mirza, Lucknow; C. J. Morgan, St. Bart.'s; H. C. Muirhead and F. J. Napier, Guy's; L. B. Neel, St. George's; Ethelwyn M. Newham, Royal Free; A. M. Nodine, Middlesex; C. L. Oakley, Univ. Coll.; T. C. Outred, Guy's; M. Owen, Univ. Coll.; C. E. S. Oxley, St. Thomas's; A. P. M. Page, St. Bart.'s; G. H. Pearce, Univ. Coll.; R. B. Peckham, Guy's; A. Phillips and M. Phillips, London; F. E. Pilkington, King's Coll.; A. C. Price, Guy's; Ruth Pumphrey, Univ. Coll.; S. Ramanathan, King's Coll.; E. H. Rink, Guy's; S. L. Robert, Bombay and Birmingham; H. E. W. Roberton, St. Bart.'s; J. M. Robertson, Guy's; Victoria M. Robinson, King's Coll.; Helen E. Rodway, Royal Free; J. D. Rose, Durham; J. Ross, Charing Cross; Ruth Sandeman, Univ. Coll.; F. M. Sandford, St. Thomas's; M. H. Shah, Lahore; Violet R. Sharp and Rosalie Shoenberg, Royal Free; M. Shorvon, King's Coll.; S. Silman, Leeds; H. Singh, Lahore; Margaret Skelton, Univ. Coll.; W. L. Sleight, Bristol; W. M. Smith and B. Southwell, Guy's; N. Stevens, St. Thomas's; Marjorie V. N. Sudds, Royal Free; A. L. Thomas, Guy's; Edith G. N. Thomas, Charing Cross; A. W. Vaisey, D. S. Valentine, and J. N. Vasudeva, St. Thomas's; G. M. Vatsalya, Royal Free; W. N. P. Wakeley, King's Coll.; Doris E. C. Walker, Univ. Coll.; Margaret M. White, Royal Free; G. W. Whittall, St. Thomas's; A. B. Williamson, Durham; Mary Wills, Royal Free; H. A. M. Wintle, St. Thomas's; F. S. Winton, St. George's; W. Woolley, Bristol; and C. Wright, Univ. Coll.

Surgery.—R. W. F. Alles and P. B. Ascroft, Middlesex; A. K. Basu, Univ. Coll.; D. A. Beattie, St. Bart.'s; F. R. Beetham, Leeds; D. H. Bolton, St. Thomas's; A. E. Bowling, Leeds; Julia A. Boyd, Royal Free; B. R. Bramwell and R. O. Brooks, Manchester; L. V. O. Brown, Guy's; C. C. Bryson, Middlesex; W. J. Burgess, St. Bart.'s; E. C. Campbell, St. Mary's; F. W. Chippindale, Guy's; S. N. Chopra, Edinburgh; W. F. Church, St. Bart.'s; H. J. Croot, Guy's; H. L. G. Davies, Cardiff and St. Bart.'s; T. J. Davies, Univ. Coll.; C. M. Dell, St. Thomas's; C. G. S. De Silva, Guy's; A. L. Devi, Royal Free; M. B. Dixit, St. Thomas's; P. G. Dowdell and D. G. Evans, Univ. Coll.; R. H. Franklin and A. J. Gibbs, St. Thomas's; Rebecca Goldstein, Univ. Coll.; R. T. S. Goodchild, London; A. H. Grace, St. Bart.'s; B. Halfpenny, Middlesex; H. C. Halge and H. C. Harley, St. Mary's; D. Hay, St. Bart.'s; J. Henry, Leeds; R. Herring, St. Mary's; R. S. Hodge, Univ. Coll.; S. W. Holmes, St. Mary's; Ethel E. Hopper, Charing Cross; G. L. Jones, St. Thomas's; H. J. Knight, St. Mary's; G. F. Langley, Bristol; L. J. Lannaman, St. Bart.'s; Grace Law, King's Coll.; V. J. Lopez, Madras and St. Mary's; S. McDonald, Cambridge and Durham; J. D. McVean, Manchester; B. R. Medlycott, Guy's; H. C. Mehta, Middlesex; P. D. Mottet, Univ. Coll.; F. Murray, London; A. M. Nodine, Middlesex; C. L. Oakley, Univ. Coll.; H. N. Palmer, King's Coll.; G. A. Y. Parker, St. Bart.'s; C. F. L. Patterson, St. George's; D. D. Payne, St. Thomas's; L. D. Pringle Guy's; Ruth Pumphrey, Univ. Coll.; T. P. V. Rao, St. Thomas's; P. V. Reading, Guy's; J. M. Reese, St. Mary's; J. I. Rerrie, St. Bart.'s; Colleen Rice, Charing Cross; B. P. Robinson, Manchester; J. D. Rose, Durham; K. M. Ross, St. Bart.'s; J. F. Sandow, Middlesex; J. D. Scott, St. Bart.'s; J. M. Searle, London; Phyllis F. L. Simon, Royal Free; R. H. B. Snow, St. Thomas's; J. K. Stanger, Durham; F. H. Stevenson, Guy's; G. E. M. Turner, Middlesex; J. N. Vasudeva, Punjab and St. Thomas's; Doris E. C. Walker, Univ. Coll.; S. Weinstein, London; A. J. Whitaker, Univ. Coll.; Margaret M. White, Royal Free; G. W. Whittall, St. Thomas's; E. G. Wilkins, Middlesex; R. C. Williams, St. Thomas's; and T. G. Williams, Middlesex.

Pathology.—A. N. Barker, St. Thomas's; K. Baxter, Manchester; W. L. H. L. Bell, St. George's; S. Bochenek, St. Bart.'s; Kathleen M. Bodkin, Birmingham; P. Brown, London; J. Carlton, Guy's; W. F. Church; St. Bart.'s; D. O. Clark, St. Thomas's; H. Coorland, St. Bart.'s; W. C. Cresdee, St. George's; R. E. M. Fawcett, St. Bart.'s; D. R. Goodfellow, Manchester; A. H. Grace, St. Bart.'s; Charlotte Gray, Univ. Coll.; C. J. K. Hamilton, Liverpool; B. Isaac, St. Mary's; H. B. Jackson, Middlesex; R. H. Leaver, St. Bart.'s; J. O. McCarter, Manchester; K. I. Nicholls, Bristol; C. L. Oakley, Univ. Coll.; A. P. M. Page, St. Bart.'s; A. Phillips, London; N. S. Plummer, Guy's; H. Ramsay, Middlesex; Louise Rees, Charing Cross; J. M. Robertson, Guy's; M. W. Robinson, Manchester; T. G. Robinson and B. Southwell; Guy's; T. Standring, King's Coll.; R. Stanley, St. Thomas's; J. G. Stewart, Westminster. K. S. Thompson, London; A. W. Vaisey, St. Thomas's; O. T. Wade, Leeds; W. N. P. Wakeley, King's Coll.; A. J. White, Middlesex; G. P. B. Whitwell, Guy's; and Edna M. Wilson, Charing Cross.

OLD EPSOMIAN CLUB.—The annual general meeting of this club will be held at the Hotel Great Central, Marylebone, N.W., at 6.30 P.M. on Thursday, Dec. 12th, and will be followed by the annual dinner at 7.15 for 7.30. The chair will be taken by Brigadier-General G. T. Mair, and all Old Epsomians, whether members of the club or not, are invited to be present on this occasion. Attention is directed to the change of restaurant on this particular occasion.

MEDICO-LEGAL SOCIETY.—A meeting of this Society will be held at 11, Chandos-street, Cavendish-square, W., on Thursday, Nov. 28th, at 8.30 P.M. when Mr. F. Llewellyn Jones, M.P., will read a paper on the League of Nations and the International Control of Dangerous Drugs.

As already announced, the annual dinner will be held at the Holborn Restaurant, London, W.C., at 7.15 P.M., on Friday, Dec. 13th, with the President, Lord Riddell, in the chair.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—A quarterly meeting of the College was held on Nov. 5th with Dr. R. A. Fleming, the President, in the chair.

Dr. William Thomson Munro was introduced and took his seat as a Fellow. Dr. Roy Mackenzie Stewart and Dr. William Malcolm McAlister were elected to the Fellowship.

The Hill Pattison-Struthers Bursary in Anatomy and Physiology was awarded to James Alexander Crawford, and the Hill Pattison-Struthers Bursary in Clinical Medicine to Dr. William Veitch Anderson. The Wood Bursary was awarded to John Macgill Drever.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the annual meeting on Nov. 4th Dr. John F. Fergus was elected President in succession to Mr. G. H. Edington. The other office-bearers appointed are:—Visitor: Mr. R. Barclay Ness. Hon. treasurer: Dr. J. H. Macdonald. Hon. librarian: Dr. E. H. L. Oliphant. The representative on the General Medical Council is Mr. Edington, and the councillors are Prof. J. M. Munro Kerr, Mr. Thomas Kay, Mr. John Patrick, Dr. R. M. Buchanan, Mr. J. Galbraith Connal, Prof. C. C. Douglas, Dr. John Gracie, Prof. Andrew Allison, Dr. J. Souttar McKendrick, and Mr. W. Ferguson Mackenzie. It may be noted that Dr. J. F. Fergus's father and his brother, the late Mr. Freeland Fergus, served as Presidents of the Faculty.

In leaving office as President Mr. Edington presented to the Faculty an interesting memorial of their founder, Mr. Peter Lowe.

The gift took the form of the first edition of Lowe's "Whole Course of Chirurgerie," published by Thomas Purfoot, London, in 1597. The library already contained copies of the second, third, and fourth editions of Lowe's "Chirurgerie," and, with this presentation, it now possesses a complete set of all the works and editions of Peter Lowe.

Copies of the first edition of this book are extremely rare. One is known to be in the Radcliffe Library, Oxford; another was in the library of the Royal Medical and Chirurgical Society of London; and a third copy is in the possession of the Royal College of Physicians of Edinburgh. The destination of a fourth copy, sold in London in October, 1924, for £120, is unknown. The copy presented to the Faculty Library by Mr. Edington is slightly imperfect, lacking some few of the end pages. Otherwise it is in very good condition.

The Faculty accepted the interesting gift with enthusiasm, and cordially thanked the donor.

GLASGOW UNIVERSITY CLUB OF LONDON.—This club will dine at the Trocadero Restaurant, Piccadilly-circus, on Friday, Nov. 29th, with Prof. F. O. Bower, F.R.S., President-elect of the British Association, in the chair, and Sir Donald MacAlister, Chancellor of the University, as the principal guest. Any Glasgow University men who, though not members of the club, desire to be present are requested to communicate with the hon. secretaries, 62, Harley House, N.W. 1.

DECORATIONS AND DISTINCTIONS.—The King has given Royal licence and authority to Dr. Herbert Chavasse Squires to wear the Insignia of the Order of the Nile (Third Class) conferred upon him by the King of Egypt in recognition of valuable services rendered by him. Dr. D. J. Mackintosh, C.B., M.V.O., has been made a Deputy Lieutenant of the County and City of Glasgow. Dr. James Cran has been appointed an Unofficial Member of the Legislative Council of the Colony of British Honduras.

JOINT TUBERCULOSIS COUNCIL.— A post-graduate course in relation to tuberculosis is to be held in the X Ray Department of the Hospital for Diseases of the Chest, Brompton, London, S.W., from Monday to Saturday, Nov. 25th–30th, conducted by Dr. Stanley Melville and members of the staff. The course will consist largely of demonstrations on screening, with lectures on technique, the surgical aspect of tuberculosis and dental radiography. Arrangements are being made for refresher work in out-patient department or wards, and a visit to a factory to see the latest things in X ray apparatus. Application to the hon. sec. of the Council at 1, Gordon-square, London, W.C. 1.

COLLEGE OF PHYSICIANS OF PHILADELPHIA: *Alvarenga Prize.*—The next award of this prize, amounting to about three hundred dollars, will be made on July 14th, 1930. Essays upon any subject in medicine will be considered provided that they have not appeared in print in any form, and have not been presented elsewhere in competition for a prize. They must be in prescribed form and must be received by the secretary of the College by May 1st. The Alvarenga prize for 1929 has been awarded to Dr. George M. Darrance, of Philadelphia, for an essay on Congenital Insufficiency of the Palate.

HOSPITAL COSTS AT NOTTINGHAM.—During the first six months of the present year the average weekly cost of each in-patient at Nottingham General Hospital was £2 14*s.* 10½*d.*, and the total cost per patient £7 8*s.* 5*d.* The average cost per bed occupied amounted to £71 6*s.* 0½*d.*; the average stay was 18·8 days.

NEW HOSPITAL AT NOTTINGHAM.—On Nov. 5th Princess Helena Victoria visited Nottingham and opened the new women's hospital, which has cost about £40,000, and will take the place of two older and smaller institutions. Accommodation is provided for 60 beds, and the new wing, which is shortly to be undertaken at a cost of about £12,000, will provide another 40 beds. The hospital has been opened free of debt.

VOLUNTARY HOSPITAL PATIENTS IN POOR-LAW INFIRMARIES.—The governors of the Royal Hospital, Wolverhampton, have arranged with the Wolverhampton board of guardians that patients recommended by its honorary staff shall, in given circumstances, be received for treatment in the New Cross Poor-law Hospital. This course has become desirable owing to the inability of the Royal Hospital to meet pressing needs. The guardians will be paid an agreed sum where patients or their dependents have contributed for a reasonable time to the funds of Wolverhampton Hospital.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 19th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship. 8 P.M., PATHOLOGY. Communications:—Dr. G. S. Wilson: The Isolation of *Brucella abortus* from a Human case of Undulant Fever. Dr. C. R. Harington: The Chemistry of the Thyroid. Demonstrations:—Dr. W. G. Barnard: Three Specimens of Ependymoma. Fellows and Members of other sections are cordially invited to attend this meeting.

THURSDAY.—5 P.M., DERMATOLOGY (Cases at 4 P.M.). Dr. H. W. Barber: Case for Diagnosis. Dr. H. W. Barber: ? Lupus Erythematosus of the Oral Mucous Membrane. Dr. G. B. Dowling: Norwegian Scabies; Pityriasis Lichenoides et Varioliformis Acuta. Dr. W. J. O'Donovan: Lichen Spinulosus. Dr. A. C. Roxburgh: Pityriasis Lichenoides et Varioliformis Acuta (with section).—Other cases will be shown.—ANNUAL DINNER OF THE SOCIETY. May Fair Hotel, Berkeley-square, London, W., at 7.30 for 8 P.M.

FRIDAY.—5 P.M., DISEASE IN CHILDREN (Cases at 4.30 P.M.). Cases will be shown. 8 P.M., EPIDEMIOLGOY and TROPICAL DISEASES. Special Discussion on Brucella Infections in Man and Animals. Openers: Dr. W. Dalrymple-Champneys (Epidemiology), Dr. J. T. Duncan (Tropical). Other speakers will also take part.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, Nov. 21st.—8.15 P.M. A Laboratory Meeting will be held at the London School of Hygiene and Tropical Medicine, Keppel-street, Gower-street, when the following amongst others will give Demonstrations: Drs. Andrew Balfour, W. Broughton Alcock, C. A. Hoare, E. Hindle and A. C. Stevenson, Colonel S. P. James, Messrs. H. S. Leeson, M. E. MacGregor, J. F. Marshall and J. Staley, Drs. A. Robertson, J. W. Scharff, A. L. Sheather and A. C. Stevenson, H. M. Shelley, Miss E. Sikes, Prof. Warrington Yorke, Dr. C. M. Wenyon, V. B. Wigglesworth.

CHELSEA CLINICAL SOCIETY.

TUESDAY, Nov. 19th.—7.30 P.M., Dinner at Hotel Rembrant, Thurloe-place, S.W., followed by discussion on Treatment of Climacteric. Opened by Dr. F. J. McCann.

LONDON CLINICAL SOCIETY.

TUESDAY, Nov. 19th.—8.45 P.M. (at the London Temperance Hospital), Meeting. Cases at 8.30 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 18th., to SATURDAY, Nov. 23rd.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., lecture by Mr. A. E. Mortimer Woolf: Hæmorrhoids. No fee. Two lectures, especially suitable for M.R.C.P. candidates.—Tues., 8.30 P.M., Dr. Langdon Brown: Recent Advances in Endocrinology. Fri., 8.30 P.M., Sir William Willcox: Some Points in Connexion with the Toxic Effects of Lead, Arsenic, Morphine, Cocaine.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. Mon., 2.15 P.M., Ward Round by Dr. A. J. Whiting. No fee.—ROYAL EYE HOSPITAL, Southwark, S.E. Wed.,

3 P.M., demonstration by Mr. A. D. Griffith. No fee.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Post-graduate course in venereal disease. Daily, every afternoon and evening, for two weeks.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W. Intensive course for two weeks.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Lecture-demonstrations, illustrated by cases, daily at 5 P.M. Further particulars from the Fellow ship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 18th.—10 A.M., Dr Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Wards.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw, Medical Out-patients. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. Dr. Scott Pinchin: Medical Out-patients.
THURSDAY.—11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.
SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.
Daily, 10 A.M. to 5 P.M., Medical, Surgical and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

SOUTH-WEST LONDON POST-GRADUATE SOCIETY, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Nov. 20th.—4 P.M., Mr. Norman Haire: Contraception Technique.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 18th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations. 4.30 P.M.: Demonstration on Practical Neurology by Dr. L. R. Yealland.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 18th.—12 noon, Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Collier: Muscular Atrophies.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. —3.30 P.M., Mr. Armour: Surgery of Compression Paraplegia.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Vascular Lesions of Nervous System.
FRIDAY.—12 noon, Dr. Purdon Martin: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Clinical Lecture.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 20th.—4.30 P.M., Mr. Claude Mills: Some Interesting Urological Cases.

KING'S COLLEGE FOR HOUSEHOLD AND SOCIAL SCIENCE, Campden Hill-road, W.
FRIDAY, Nov. 22nd.—5 P.M., Prof. V. H. Mottram: Human Nutrition. (Last of six lectures.)

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.
MONDAY, Nov. 18th.—5 P.M., Prof. Leonard Hill: Clothing and Climate.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL Gray's Inn-road.
FRIDAY, Nov. 22nd.—4 P.M., Mr. J. D. McLaggan: The Treatment of Chronic Suppurative Otitis Media.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.
THURSDAY, Nov. 21st.—9 P.M., Mr. John Everidge: Hæmaturia: Its Diagnosis and Significance.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Nov. 19th.—3.15 P.M., Mr. W. B. Gabriel: The Treatment of Acute Suppuration.

BRITISH SCIENCE GUILD.
TUESDAY, Nov. 19th.—4.30 P.M. (in the Goldsmiths' Hall, Foster-lane, E.C.), Sir Walter M. Fletcher: Medical Research: the Tree and the Fruit.

PEOPLE'S LEAGUE OF HEALTH, 12, Stratford-place, W.
FRIDAY, Nov. 22nd.—6 P.M. (at the Medical Society of London, 11, Chandos-street, W.), Dr. E. G. Howe: Infant, Youthful, Adolescent, and Adult Life.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 20th.—4 P.M., Mr. Malcolm Donaldson: Early Diagnosis and Treatment of Malignant Disease.

CHADWICK PUBLIC LECTURES.
FRIDAY, Nov. 22nd.—8.15 P.M. (at the Royal Society of Arts, John-street, Adelphi), Prof. A. E. Boycott: The Causes of Cancer.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Nov. 19.—5 P.M., Dr. J. A. Drake: Leprosy.
THURSDAY.—5 P.M., Dr. A. Whitfield: Tuberculosis Cutis (1).

ANCOATS HOSPITAL, Mill-street, Manchester.
THURSDAY, Nov. 21st.—4.15 P.M., Mr. P. McEvedy: Treatment of Hæmorrhoids.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, Nov. 22nd.—3.30 P.M., Mr. Mackie: Ophthalmic States related to Gastro-Intestinal Disorders.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 19.—4.15 P.M., Mr. W. R. Douglas: Some Recent Advances in the Surgery of Cancer.
FRIDAY.—4.15 P.M., Dr. R. Ellis: How the Electrocardiograph helps in Diagnosis and Treatment.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, Nov. 20th.—4.15 P.M. (in the Western Infirmary), Mr. Roy F. Young: Demonstration of Surgical Cases.

Appointments.

BELL, J. H., M.B., Ch.B. Edin., has been appointed Casualty House Surgeon at the Salford Royal Hospital.
DUGGAN, NORMAN, M.B., Ch.B. Manch., F.R.C.S. Eng., Honorary Surgeon to Worcester General Infirmary.
GLEAVE, H. H., M.B., Ch.B. Leeds., Senior Lecturer in Pathology in the University of Liverpool.
LINDSAY, ELIZABETH M., M.B., Ch.B. Edin., Medical Officer of the Parish of Creich and Superintendent of Swordale Institution, Bonar-Bridge, Scotland.
PATON, R. Y., M.B., B.Chir. Camb., Assistant Surgeon, Royal National Orthopædic Hospital.
ROBERTS, J. T. C., M.B., Ch.B. Liverp., Assistant Medical Officer of Health, Lewisham.
SAUNDERS, M. J., L.R.C.P. & S.I., Certifying Surgeon under the Factory and Workshop Acts for the Portland District of Dorset.
STRUTHERS, J. A., M.R.C.P. Lond., D.P.H., Physician to the Willesden General Hospital.

Vacancies.

For further information refer to the advertisement columns.

Altrincham General Hospital.—H.S. At rate of £125.
Barnsley, Beckett Hospital and Dispensary.—H.P. £140.
Barry Surgical Hospital.—H.S. At rate of £200.
Birmingham City Babies' Hospital.—Res. M.O. At rate of £150.
Birmingham, Dudley-road Hospital.—Surgeon. £700.
Birmingham Royal Cripples Hospital.—H.S. At rate of £200.
Blackburn and East Lancashire Royal Infirmary.—Fourth H.S. £130.
Bolton Infirmary and Dispensary.—H.S. £150. Also Asst. H.S. £100.
Brighton, Royal Sussex County Hospital.—Hon. Surg. Clin. Asst. Also H.S. and Cas. H.S. £150 and £120 respectively.
Bristol, Stoke Park Colony.—Director of Medical Services. £1200.
Brookfield Orthopædic Hospital, Hale End, Woodford Green.—Anæsthetist. 1 guinea per attendance.
Cardiff, King Edward VII. Welsh National Memorial Association.—Area Asst. Tuber. Physician. £600.
Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100. Also Registrar. £50.
Chester Royal Infirmary.—Two H.S.'s. Each £150.
City of London Hospital for Diseases of Heart, &c., Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.
City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.
Colonial Medical Service.—M.O.'S. East Africa, £600. Malaya, $500 per month.
Dreadnought Hospital, Greenwich.—H.P. and H.S. At rate of £110.
Ealing Borough.—Asst. M.O.H. £600.
East London Hospital for Children, &c., Shadwell, E.—Surgeon to Nose, Throat, and Ear Dept.
Epsom, Surrey, The Manor.—Res. Med. Supt. £671.
Essex County Sanatorium, Black Notley, near Braintree.—Res. M.O. £650.
Evelina Hospital for Children, Southwark, S.E.—Hon. Surgeon to Out-Patients. Also H.S. At rate of £120.
Glasgow, Royal Hospital for Sick Children.—Two H.S.'s.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.P. At rate of £135.
Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—Cas. M.O. and Cas. Surg. O. Each at rate of £100.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £100. Also Part-Time Jun. Cas. O. At rate of £150.
Ipswich, Heathfields Infirmary, &c.—Asst. Res. M.O. £250.
Leeds Jewish Herzl-Moser Hospital.—Res. M.O. £100.
Lincoln, Bracebridge Mental Hospital.—Third Asst. M.O. £350.
Manchester, Salford Royal Hospital.—H.P. At rate of £125.
Metropolitan Ear, Nose and Throat Hospital, Fitzroy-square, W.—H.S. £150.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. Also Jun. Res. M.O. At rate of £140 and £100 respectively.

Mothers' Hospital, Clapton, E.—Hon. Asst. Obstet. S.
Nairobi Municipal Council.—M.O.H. £1100.
National Hospital, Queen-square, W.C.—Res. M.O. £200.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Two Hon. Asst. S.'s.
Northwood, Mount Vernon Hospital.—H.S. for Cancer Section. £200.
Perth Infirmary.—Jun. H.S. £75.
Plymouth, South Devon and East Cornwall Hospital.—Res. Surg.O. Also H.S. At rate of £150 and £100 respectively.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Clin. Assts.
Rochdale Infirmary and Dispensary.—Jun. H.S. £175.
Rochford, Poor-law Hospital.—Jun. Asst. M.O. At rate of £225.
Royal College of St. Katharine, Poplar, E., Maternity and Child Welfare Centre.—Asst. M.O. £1 11*s.* 6*d.* per session.
Royal College of Surgeons of England.—Examiner in Dental Surgery.
Royal Free Hospital, Gray's Inn-road, W.C.—H.S.'s, H.P.'s, &c. Each £150. Second H.P. and Obstet. Dist. Asst. £100. Surg. Reg. £200. Half-time Gynæcological Reg. and Med. Reg. Each £100.
St. Mary's Hospital, W.—Med. Reg. to Out-patients. £200.
St. Thomas's Hospital, S.E.—Two Surg. Reg.'s. Also Med. Reg. for Children's Dept. Each £250.
Sheffield, Jessop Hospital for Women.—Asst. H.S. At rate of £100.
South London Hospital for Women, South Side, Clapham Common, S.W.—Clin. Assts.
Southampton, Royal South Hants and Southampton Hospital.—Asst. H.S. and Res. Anæsthetist. At rate of £140.
South Eastern Hospital for Children, Sydenham, S.E.—Res. M.O. At rate of £75.
Stamford, Rutland and General Infirmary.—H.S. At rate of £200–£250.
Surrey County Council.—Asst. M.O. £600.
Tilbury Hospital, Essex.—Med. Supt. £250. Also H.S. At rate of £150.
University College Hospital, Gower-street, W.C.—Hon. Anæs.
Warrington Infirmary and Dispensary.—Jun. H.S. £175.
West London Hospital, Hammersmith-road, W.—H.P., H.S. Aural and Ophth. H.S. and Asst. Cas. O. Each at rate of £100. Also Asst. Surgeon Dentist.
Windermere, Ethel Hedley Hospital for Crippled Children.—Res. H.S. At rate of £150.
Windsor, King Edward VII. Hospital.—Two H.S.'s. Each £100.
Worcester City Council.—M.O.H. £900.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Shefford (Beds), Eckington (Derbyshire), Wadebridge (Cornwall), Calvert (Bucks), and Llanfyllin (Montgomery).

Births, Marriages, and Deaths.

BIRTHS.

CRAIG.—On Nov. 6th, at Cheadle Hulme, the wife of Dr. Nicholas Craig, of a daughter.

FLOWER.—On Nov. 7th, the wife of Dr. Norman Flower, Yeovil, of a son.

HOLMES.—On Nov. 4th, at Hoghton-street, Southport, the wife of John Holmes, M.B., M.R.C.P., of a son.

HORSBURGH.—On Nov. 3rd, at Lyndhurst, Manor Court-road, Nuneaton, the wife of Dr. P. G. Horsburgh, of a son.

MARRIAGES.

RICHARDS—HODGKINSON.—On Oct. 5th, at Shiraz, Persia the Rev. J. R. Richards to Katharine Mary Hodgkinson, M.B., B.Ch., only daughter of Mr. and Mrs. W. E. Hodgkinson, Inglewood St. Michael's, Tenterden, Kent.

DEATHS.

FALKINER.—On Oct. 30th, at Dublin, Ninian McIntire Falkiner, M.D., F.R.C.P.I., late of Tyone, Healthfield-road, Terenure, County Dublin.

GILES.—On Nov. 4th, at Floraire, Torquay, Frederick William Giles, M.R.C.S., M.B.

GREENWOOD.—On Nov. 7th, at Hanover House, Regent's Park, Edwin Clinson Greenwood, O.B.E., M.R.C.S., L.R.C.P., Medical Superintendent to St. John and Elizabeth Hospital.

SEALEY.—On Nov. 3rd, at Arundel-road, Tunbridge Wells, Francis Marmaduke Sealey, J.P., M.R.C.S., L.R.C.P., in his 71st year.

SWINHOE.—On Nov. 10th, suddenly, at The Close, Swindon, George Rodway Swinhoe, M.R.C.S., aged 61.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices o Births, Marriages, and Deaths.

BRITISH HOSPITALS ASSOCIATION.—This association has just been registered as a company limited by guarantee, not having a share capital, to acquire the undertaking and such of the assets and liabilities of the British Hospitals Association as may lawfully be acquired. The management is vested in a Council, the first members of which include Sir Arthur Stanley, Lord Knutsford, and Lord Stanmore. The hon. sec. is Mr. R. H. P. Orde, and the registered office, 32, Gordon-square, W.C.

Notes, Comments, and Abstracts.

RACIAL STUDY IN SCOTLAND.

IN a presidential address to the Aberdeen Medico-Chirurgical Society on Oct. 31st Prof. Alexander Low pointed out that while undoubtedly hygiene and better nutrition were important factors making for better health, attention should also be paid to racial inheritance. In Scotland much less displacement of population by invasion had taken place than was commonly supposed, and racial types could be traced in varying proportions in different parts of the modern population. Thus the study of racial strain was a matter of practical importance.

The present inhabitants of Scotland, said Prof. Low, included a primitive substratum from palæolithic days, together with representatives from the Nordic, Mediterranean and Alpine races. The tall, fair, long-headed Nordic was more suited to rural than urban conditions, and there was evidence (E. G. Bowen) that in towns he was especially liable to diseases, such as tuberculosis, when depressed into industrial poverty. The broad-headed Alpine was an element that entered largely into the make-up of the people in the north-east of Scotland and was characterised by patience, thrift, and caution. The short, dark, long-headed Mediterranean type was found in the poorer quarters of the large cities—for example, in Glasgow—where they seemed to resist disease caused by overcrowding. In Glasgow the infant mortality had shown a uniform fall, and it was argued that the large proportion of immigrant Irish and Jews had added vigour to the native stock; but the suggestion was put forward that in Glasgow there was a large Mediterranean element in the population and that this dark strain encountered the adverse conditions of city life more successfully than the Nordic.

In attempting to record developmental changes and their correlation, if any, with different race types, Prof. Low had come to the conclusion that growth-promoting internal stimuli differed in different races. Some seven years ago with the coöperation of Prof. R. G. McKerron at the Aberdeen Maternity Hospital and Dr. James A. Stephen of the Child Welfare Centre, he had begun to follow up growth in infants and had been led to study how far and in what way racial type affected development.

Knowledge of the physical characteristics of the pre-school child had previously been based on single measurements of groups of infants, and there was thus no way of estimating the degree of variation in the same child from year to year. To follow the growth of individual children was slow and laborious, and though for the past seven years many had been under observation the work was still far from complete. About 1000 infants had been examined at birth and so far as possible re-examined yearly.

In the Aberdeen infants examined the average birth-weight of the male infant was 3458 g. (7·625 lb.) and of the female 3444 g. (7·59 lb.). Thus there was little difference between the average weights of the two sexes, but infants born in Aberdeen were from six to eight ounces heavier at birth than those born in other towns in Great Britain. The average birth-length of males was 49·2 cm. (19·3 inches) and of females 48·7 cm. (19·18 inches), about one inch less than the usually accepted average birth-length. The average weight of the same group of infants at 12 months was 9240 g. (20·37 lb.) for males and 8306 g. (18·312 lb.) for females, and the average lengths at 12 months for males was 72·0 cm. (28⅜ inches) and females 70·1 cm. (27⅝ inches).

THE INDICTMENT OF CERTAIN INDIAN CUSTOMS.

OF the large crop of books and newspaper articles which followed the publication in 1927 of "Mother India" the great majority have already been consigned to oblivion, but some of them came from sources which it is impossible to disregard, and Mr. Field has performed a useful service in summarising the case for and against Miss Mayo's indictment of some Indian customs.[1] He is particularly well qualified for this task, since he was at one time working in close association with Miss Mayo, and has had access to documents in her possession.

In such a mass of evidence as was accumulated by Miss Mayo it was inevitable that some inaccuracies should occur, but with remarkably few exceptions her statements are substantiated. This, indeed, one would expect from her previous record which is detailed by Mr. Field and shows that "Mother India" was by no means her first adventure in the field of social research. Her book met with a hostile reception from the Indian press as a whole, but criticisms were not all unfavourable. It is a curious fact

[1] After Mother India. By Harry H. Field. London: Jonathan Cape. 1929. Pp. 299. 7*s.* 6*d.*

that the most striking evidence in favour of Miss Mayo's work comes indirectly from the great Hindu mystic Mohandas Karamchand Gandhi himself, although in an article in his own paper he attacked it with vigour. The Hindu customs arraigned by Miss Mayo are the very ones which Mr. Gandhi himself deplores

It has been said that Miss Mayo's book is untrue to facts and unjust to the people of India. The book certainly came as a shock to many European friends of India, as well as to Indians themselves, and it may fairly be argued that to enter the country through a temple of Kali, and to concentrate on social abuses throughout, is not to see it whole. To this Miss Mayo replies that she does not claim to give a complete picture of Indian life, nor pretend to dwell upon the virtues and accomplishments of the Indian people. The great question, after all, is what are the results of Miss Mayo's outspoken criticisms. Some of these are already not far to seek, although, as Mr. Field says, it will probably be decades before a comprehensive estimate can be made. For the present, however, they are sufficiently well summed up in a paragraph from the *Statesman* (Calcutta) of April 11th, 1929, which runs as follows :—

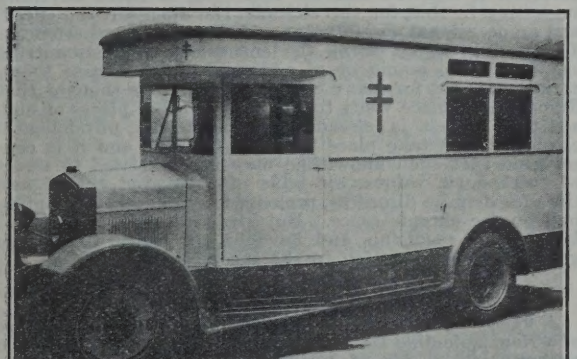
"We believe that with all its faults of over-statement and exaggeration Miss Mayo's first book ("Mother India") did definite and traceable service. It provoked a vast torrent of indignation, but it gave strength to all the reformers who are endeavouring to change conditions in India. It shocked people out of complacency. Indians saw how they were presented to western eyes. . . . Nobody could longer blind himself to the fact that child marriage, the prevention of the remarriage of widows, the treatment of the outcaste and cruelty to animals outraged the western peoples. . . . Reform must come from within. Happily, there is evidence on all hands that Indian opinion is changing and that the new movement is finding leaders. When it has triumphed, India itself will be able to take a more charitable view of those who first uttered the thoughts of the West."

New legislation on the subject of the age of marriage has recently borne testimony to the influence which "Mother India" has brought to bear on social problems, for it can hardly be contested that the wave of feeling on this question was partly due to Miss Mayo's book.

AN ANTI-TUBERCULOSIS MOTOR VAN.

THE Fiat Motor Car Company of Turin has presented to the Red Cross Society at Rome a travelling dispensary equipped with the latest appliances of medical science for the campaign against tuberculosis. It is intended that vehicles of this type should carry the campaign into rural districts and remote mountain villages devoid of doctors and hospitals. The running cost is said to be low, for about 20 visits can be made in a radius of 20 miles or so

FIG. 1.



The motor van bearing the combined red-cross anti-tuberculosis symbol.

during the day at a cost of about two shillings per consultation. The equipment, supplied by the Itan Company of Milan, comprises a complete X ray installation, microscope table, apparatus for analysis and sterilisation, as well as a projector to illustrate popular lectures on health and prophylaxis. The whole is mounted on an all-metal body motor chassis, where it can be used with the same efficiency and safety as in hospital. To avoid the diffusion of radiation, the tube is properly protected and an "antix" rubber protector screens off secondary rays. All parts of the installation which come into contact with the patient are covered with easily changeable or disinfectable paper and celluloid screens. Apparatus carrying high tension current is insulated from surrounding objects, and all metal parts are earthed. The generator, which is outside the dispensary, alongside the chauffeur, furnishes sufficient current for an X ray photograph of the thorax to be taken in a fraction of a second. The stores for photographic plates and slides are fitted with safety locks, so that should the controller forget to close them an electrical device rectifies the omission. During an X ray examination the dispensary is lit by a special filtered ray lamp which, while not interfering

FIG. 2.

The interior of the van with a consultation in progress.

with the clearness of the image on the screen, does not leave the patient in the dark. The X ray apparatus can be carried into the patient's bedroom in case he is unable to leave the house. We are told that inquiries for motor vehicles of this type have been received from America, Belgium, and especially the Balkan countries.

A HOSPITAL FANCY.

AN account of the hospital of the future, as imagined by one who evidently derides many scientific "improvements" of to-day, is amusingly provided in the current number of the *St. George's Hospital Gazette*. The leading member of the staff is the "head electrical expert and master of mechanics," known as H. E. Next to him come in order electroradiological therapeutists, biochemicosanguinologists, uroproctologists, proctourologists, aurorhinists, rhinoaurists, bacteriopathological experts, electromechanicians, one physician and one surgeon! There is no dentist on the staff, for no patient is admitted to the hospital who still retains any teeth, because of the possible infection from these. The routine preparation of the stranger who desires to visit the hospital takes seven days, so thoroughly imbued are the authorities of the institution with the principles of scientific preventive medicine. Inside the hospital all use of the feet is abandoned, transport being entirely by electric propulsion or by aeronautics. In the operating theatre the table suddenly appeared under no apparent motive power and rolled itself into the middle of the theatre. A remarkable rumble heralded the arrival of the unconscious patient who was wafted on to the operating table. This, worked from without, executed a remarkable series of convulsive jerks till the patient was in the position required by the uroproctologist about to operate. He glided in on and was removed from a small electric trolley and was suspended at the convenient height in proximity with the patient's exposed anal area. This was rapidly prepared by aero-sterilisation, and the accompanying din put a premature end to the observer's visit. The imaginary hospital appears to be placed in America, but the writer's attitude and initials, J. B., are suggestive of John Bull.

THE PREVENTIVE MEDICINE OF DIVORCE.

WHILE some are disposed to believe in haste that marriage is an outgrown institution, others, equally aware of the growing divorce lists, are sure that sick marriages may often be cured and still more often the sickness be prevented. Physicians in many lands have been offering their services in the solution of this human and social problem. In June last the French Congress of Legal Medicine discussed the value of the medical pre-nuptial certificate.[1] The object envisaged was not merely to detect venereal disease but also other forms of contagious disease, hereditary defects, and early stages of such diseases as tuberculosis which are liable to make more rapid progress under

[1] Mariage eugénique et certificat prénuptial, Tribune Méd., 1929, lxiii., 399.

the strain of marriage and pregnancy. The objections raised to the institution of this certificate were directed only against its compulsory features and not against the essential proposal that medical examination before marriage is to be encouraged. In Germany the Berlin-Steglitz section of the National Association of Red Cross Women has established a "matrimonial consultation service" to help married couples to overcome or to avoid the difficulties that arise in the course of married life.[2] Although this service is directed by a psychologist who is not a graduate in medicine, it is explained that the service works in close coöperation with the public health service. At the third international congress of the World League for Sexual Reform, held last month in London, a paper by Dr. Abraham Stone, of New York, was read in absentia. The writer pointed out that there is even a statistical correlation between premarital examination and happiness in the future married life. The importance of this procedure is again emphasised in a paper published still more recently.[3] "The preventive medicine of divorce," writes Dr. Earp, "consists in premarital advice not only on how to choose, but also on how to live with the chosen mate; supplemented by premarital medical examination, designed to exclude impossible partnerships and to safeguard others from unnecessary difficulties and pain."

"ELECTRICAL SECURITY."

THE enormous increase in the use of electricity throughout the country, not only for lighting but for other services, implies a higher standard of safety in electrical installations. The wiring which has proved adequate for the lighting of a house may fail disastrously when required to carry the current needed for electric fires; in particular electro-medical apparatus of all kinds require a high standard of workmanship not only in the instrument but also in the supply feeding it. The Electrical Contractors' Association have issued a small booklet under the above title which deals with these and kindred points. The different types of installation are explained with the advantages, limitations, and relative cost of each; the makeshifts of careless wiring are tabulated and types of satisfactory fittings are described and illustrated.

The booklet has practical value, not only for the electrical engineer, but for every user of electrical power. The question arises, however, whether the high standard of safety demanded here is practicable. Most of the recommendations are based on regulations drawn up by the Institute of Electrical Engineers, and in the main they form an invaluable standard. When such schemes are drawn up the necessity of avoiding risks is felt so strongly that often an unreasonable margin of safety is demanded. Later it is found in practice that it is perfectly safe to ignore some particular rule and trust to experience, with the inevitable result that a rule which can be broken with impunity brings the whole scheme into contempt. Thus a rule originally framed to ensure perfect safety may have exactly the opposite effect in practice.

As an example, take the condemnation of ordinary twin flex which, according to this booklet, should be confined to stationary lights. The use of this form of wire for taking current to all sorts of portable apparatus is nowadays so universal that it will need more evidence than is given here of the dangers involved before the public is likely to abandon its use. The alternative specified consists of three flexible wires in an outer cover. It is difficult to see the superiority of such a cable except in the matter of kinking, whilst the increase in cost would be enormous.

MOTHERCRAFT.

MEDICAL men and women, even if they are not in practice are apt to be called into consultation on matters of mothercraft in and out of season, though their advice is not always accepted. Dr. L. G. Housden[4] has anticipated many of the questions usually asked, and suggests to his readers "if your friends worry you excessively, give them this book to read." He opens his introductory letter with the disarming statement: "This is not a medical book, but a series of short chapters dealing in a practical manner with the various problems of babyhood." The teaching is, in fact, quite elementary, and could be appreciated by young mothers of no great educational attainment, though some of the recommendations are hardly within the reach of poorer sections of the community. Dr. Housden is a relentless advocate of breast-feeding, but the faithful disciple of Sir Truby King will read with surprise the suggestions that for the first few days of life a night-feed may be given; that mackintosh knickers are unobjectionable, and that half a teaspoonful of water between feeds is the most that a baby may receive, and that only in abnormally hot weather. The author points out the absurdity of believing that new-born infants are in need of either aperients or operations; the baby who passes irregular motions and the tongue-tied baby will both achieve normality with the exercise of patience, and circumcision should only be performed where there is some real difficulty in passing water. The aim of the book is to induce a sense of confidence in the mothers who read it, and many minor causes of alarm are robbed of their terror by straightforward analysis and explanation. Perhaps the best chapter is that on character training, which emphasises the importance of the personal as well as the material environment.

[2] Information Bulletin, League of Red Cross Societies, 1929, viii., 263.
[3] Earp, J. Rosslyn: Marriage, Divorce, and the Doctor, Co'orado Med., October, 1929, p. 339.
[4] Mothercraft. By Leslie George Housden, M.B., B.S. London: Herbert Jenkins, Ltd., 1929. Pp. 128. 2s. 6d.

ANOTHER LOCAL ANÆSTHETIC.

A NEW analgesic called "perkain" receives warm commendation from those who have tried it both experimentally and in clinical practice.[1] Unlike cocaine, tutocaine, and other local anæsthetics, it is not a benzoamino-alcohol product, but is a complicated derivative of the quinoline group. It consists of colourless crystals which dissolve easily in water with an alkaline reaction. The solution can be sterilised by boiling, and can be used in conjunction with adrenalin. It is more slowly absorbed than cocaine, and poisonous effects are therefore less easily brought about, and are in many cases said to be far less. It is stated that there is no likelihood of acquiring a drug habit from perkain. It has given complete satisfaction as a surface analgesic on mucous membranes, and when injected into the bladder for cystoscopy. For this purpose 30 to 40 c.cm. of a 1 in 1000 solution was used. As a spinal analgesic for lumbar injection it has not given good results in seven out of the ten instances in which it was employed. So far the largest series of cases reported of the use of perkain for local analgesia is 200. One case of collapse is reported after the use of a solution much stronger than 1 in 1000.

LA CURE D'AIR.

IT is still not an uncommon practice for the physician to prescribe a sea voyage, and in the last century a trip to the antipodes was popular as a therapeutic measure. But the physician's armoury changes with the times, and Dr. Charles L. Julliot may be right when he suggests[2] that the aeroplane will eventually replace the ship as a therapeutic mode of locomotion. The use of aviation for the evacuation of wounded in time of war or the transport of sick in time of peace is already well known, but it is in Central Europe that the air is being exploited as a form of treatment. According to a well-known German medical review a young girl of 14 has been cured of a persistent cough by a trip in an aeroplane, while a neurasthenic patient has obtained a renewed zest for life. Nor is there anything surprising in this, for the altitude, the open air, the speed, and an occasional nose-dive are all stimulating experiences. The review sagely warns the enthusiast from submitting cases of acute mania or of advanced heart disease to an aerial cure, but for many other disorders it is thought that flying may replace visits to the Alps or other places of high altitude. Much is already known of the physiological changes which take place at high altitudes, and it is conceivable that such knowledge may be translated in terms of therapeutic value: air trips of graduated height and time for definite disorders, prolonged treatment in a captive balloon for chronic cases. But Dr. Julliot is a doctor of law, not of medicine, and he does not venture from the general recommendation to the special application.

"A NEW QUINOLINE DERIVATIVE."

A PAPER by Mr. George Armitage and others on the Use of a New Quinoline Derivative in the Treatment of Infection appeared on p. 968 of our last issue. The British Drug Houses, Ltd. (16, Graham-street, City-road, London, N. 1), inform us that they can supply the preparation therein described.

[1] Münch. med. Woch., Oct. 11th, p. 1714.
[2] Presse Méd., Oct. 12th, p. 1337.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—Last week the Duchess of York opened extensions of this hospital at Haverstock Hill, which have cost £12,000. The enlargements include a new operating theatre, a dispensary, and a casualty department, additions to the pathological laboratory, a lecture theatre for nurses and post-graduates, additions to the accommodation of the resident medical staff, and a block of emergency beds which has necessitated the reconstruction and improvement of the private wing, in which there are 21 beds for paying patients

Bradshaw Lecture

ON THE

SURGERY OF THE GALL-BLADDER AND BILE-DUCTS.

A REVIEW.

Delivered before the Royal College of Surgeons of England on Nov. 14th, 1929,

BY R. P. ROWLANDS, O.B.E., M.S.LOND.,

FELLOW AND COUNCILLOR OF THE COLLEGE; SURGEON TO GUY'S HOSPITAL.

THE surgery of the gall-bladder and bile-ducts is only about fifty years old. Lister's [1] epoch-making discoveries had paved the way for it some twelve years earlier, but surgeons were very slow to accept his principles and to adopt his methods with confidence, and especially to apply them to do pioneer work in the dangerous area of the upper abdomen.

Before Lister's time little was attempted beyond the opening of abscesses and cautious slitting of sinuses for the extraction of stones. Through all the years that had gone before, medicine had little to offer beyond relief of pain by drugs. As late as 1890 a distinguished physician confidently advocated massage as a means of expelling stones from the bile-ducts into the duodenum.

In 1733 Petit [2] had suggested and described cholecystotomy, but the fear of peritonitis was so great that the operation was not actually performed until 1867. At this date J. S. Bobbs,[3] exploring for a supposed ovarian cyst, found and opened a gall-bladder distended with mucus, and extracted about 50 small stones, closed the gall-bladder and dropped it back; and the patient recovered. In 1878 Marion Sims performed cholecystostomy in a very late case of jaundice due to gall-stones, but the patient, who was very ill and bleeding at the nose, died soon afterwards; and in 1879 W. W. Keen had a similar experience. In August of the same year Lawson Tait [4] successfully removed a large stone from the gall-bladder and a small one from the cystic duct. The edges of the incision in the gall-bladder were sewn to the skin. By 1885 he had operated upon 15 patients, and in 1889 he published a list of 55 cholecystostomies with only 3 deaths. By this time surgery was benefiting by the teachings of Lister, and operations upon the gall-bladder were rapidly increasing.

In June, 1885, Mayo Robson, "with all the usual measures as to cleanliness, and with full antiseptic precautions, including the spray," successfully performed his first cholecystostomy, and in 1892 published his stimulating book upon gall-stones, with full details of 41 operations. Since then, thanks to the work of the Leeds School, and of many other surgeons at home and abroad, the surgery of the bile-tract has advanced by leaps and bounds (Fig. 1).

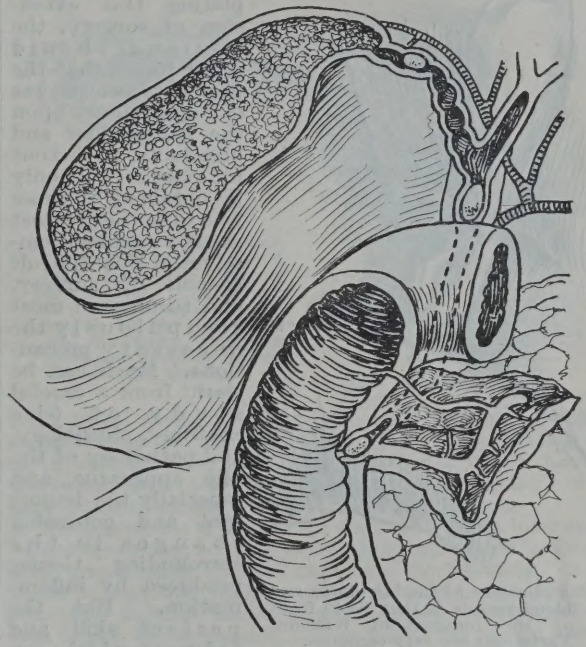
One of the most recent contributions from Leeds is a valuable statistical study of cholelithiasis by Dr. Gross,[5] based on a series of 9531 autopsies on patients of all ages performed at the Leeds Infirmary during the years 1910 to 1926 inclusive. In this series, 802 (or 8·4 per cent.) were the subjects of cholelithiasis. Dr. Gross concludes that obesity has a greater influence than pregnancy upon the formation of gall-stones; that gall-stones are only twice as common in women as in men; and that they do not occur more frequently in married than in single women. She also emphasises the frequent association of gall-stones with inflammation and cancer of the gall-bladder and bile-ducts.

Our knowledge of the abnormalities of the bile-ducts and of the arteries associated with them has been amplified by Flint.[6] Descomps [7] and Eisendrath [8] had already drawn attention to these important variations. Mayo Robson, in his book already mentioned, described the following six operations:—

1. Cholecystostomy, or drainage of the gall-bladder.
2. "Ideal Cholecystotomy": in this operation, after the stones had been removed, the gall-bladder was closed and dropped back into the abdomen.
3. Cholelithotrity, or crushing the stones.
4. Cholecystectomy, or removal of the gall-bladder.
5. Choledochotomy, or incision of the common bile-duct.
6. Cholecystenterostomy, or joining the gall-bladder to the bowel.

Cholecystostomy was the operation of choice. At first the gall-bladder was sewn to the skin, but later to the aponeurosis, to lessen the risk of fistula. It took some time for surgeons to learn that a rubber tube sewn into the gall-bladder in an airtight manner gives the best, simplest, and safest drainage. This is a good operation, and is especially useful for bad subjects and for surgeons lacking great experience. It saves lives, without endangering the bile-ducts.

FIG. 1.



Anatomy of the biliary apparatus. Stones are shown in the cystic duct, common bile-duct, and ampulla of Vater. The pancreatic duct of Wirsung and the accessory duct of Santorini are shown, the latter opening separately into the duodenum.

"*Ideal Cholecystotomy*" was abandoned as too dangerous—leakage and peritonitis having followed in a number of cases.

Cholelithotrity was introduced by Lawson Tait and was almost exclusively used for stones impacted in the bile-ducts, whence their extraction by incision was considered too difficult and dangerous. The stones were crushed between the finger and thumb, with padded forceps, or split by means of a fine round needle. This method, although useful at a pinch, is crude and apt to be followed by recurrence, because of the debris left in the ducts.

Cholecystectomy was introduced by Langenbuch [9] in 1882. His first operation for the removal of a calculous gall-bladder was successful, but two out of his first four operations were fatal—one from peritonitis and the other from an abscess of the choroid plexus. The operation was rarely done for some years. Robson only did it once in his first 40 cases, and only 47 cholecystectomies were recorded up to 1890. Now it is the operation of choice for most diseases limited to the gall-bladder and cystic duct, because it is the most radical and generally successful.

For many years only the serious effects of gall-stones were treated by surgery; but with increasing knowledge, acquired from operations and the study of

early symptoms, both physicians and surgeons now endeavour to forestall these serious consequences, and even to prevent the formation of gall-stones, by preventing or eliminating the infection which almost constantly precedes it. This is a high aim, and offers great opportunities both for preventive medicine and preventive surgery. Dr. A. F. Hurst[10] has made valuable contributions to the medical treatment of cholecystitis. At present, operations on the bile tract are rapidly increasing in number.

FIG. 2.

The relations of the bile-ducts and blood-vessels as they lie in front of the foramen of Winslow. Variations are very common.

While contemplating this extension of surgery, the beginner should never forget that the present great success of operations upon the gall-bladder and bile-ducts, carried out by experts, can only be obtained by those who take the greatest pains to train themselves in this difficult branch of surgery, and to observe most scrupulously the necessary precautions. Much can be learnt from a careful study of the anatomy, physiology, and pathology of the bile apparatus, and especially the important and confusing changes in the surrounding tissues produced by inflammation. But the perfect skill and judgment which can save a surgeon from the pitfalls that beset his path can only be attained by watching, assisting, and operating under the supervision and encouragement of a master in this special branch of surgery. Thus, with perfect training and greater care, we ought to see and hear less of those injuries to the bile-ducts which demand difficult reconstructive operations. Here, prevention is far better than cure.

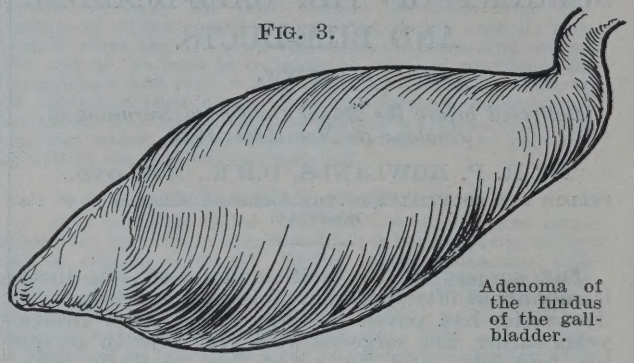
ANATOMICAL VARIATIONS OF THE GALL-BLADDER, BILE-DUCTS, AND BLOOD-VESSELS.

The *gall-bladder* varies considerably in position and size, and when it is placed high up and far back in the right loin or embedded in the liver substance it may be very difficult to deal with. Rarely it is double, divided, or absent; but frequently, as a result of disease, it is either contracted or very large; and sometimes it is so adherent to important structures as to be difficult to define or unsafe to remove.

Bile-ducts.—The cystic duct is often long, running parallel to and adherent to the common hepatic duct which it may join behind the duodenum. On the contrary, it may be, or appear to be, very short or absent. Under these circumstances, it is easy to buttonhole or divide either the common hepatic or the common bile-duct. According to Flint, an accessory right hepatic duct is present in 15 per cent. of cases. It usually discharges near the angle of union of the cystic and common hepatic ducts, and is apt to be divided during removal of the gall-bladder. If this accident passes without recognition and treatment, and the wound is not drained, leakage of bile and secondary infection may be disastrous by causing local or diffuse peritonitis (Fig. 2).

Arteries.—The so-called normal arrangement of the arteries was found by Flint in only 69 of his 200 consecutive dissections. The relations of the vessels to each other and to the ducts are so variable that constant care is necessary to avoid mistakes which may lead either to severe bleeding or to the accidental tying of the right hepatic artery. The bleeding may be almost impossible to stop without seriously

FIG. 3.



Adenoma of the fundus of the gall-bladder.

damaging the bile-ducts in the depths of the wound. Tying the hepatic artery is a grave error, which is bound to interfere with the nutrition of the liver and may lead to the death of the patient. These mistakes can be avoided only by keeping very close to the gall-bladder and its duct, by using gauze dissection, and by examining each vessel very carefully before it is tied and divided. The large size of the right hepatic artery should save it from confusion with the cystic artery.

A branch of the gastro-duodenal or of the pancreatico-duodenal, or even one of these arteries, itself may lie in front of the common bile-duct just above the duodenum where it may be lacerated when the duct is hurriedly opened without carefully separating its coverings.

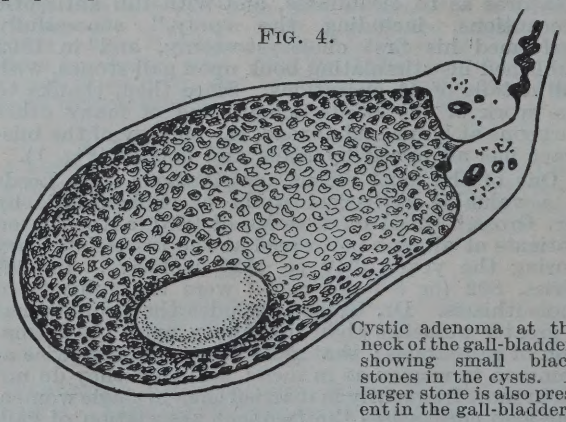
DIAGNOSIS.

Many advances have been made in the diagnosis of cholecystitis and cholelithiasis. As about 10 per cent. of the population have gall-stones, and many more have cholecystitis, there are plenty of opportunities for testing new and old methods of diagnosis. But gall-stones may lie dormant for long periods, and may be discovered accidentally during routine examinations or even after death.

In 1908 Lord Moynihan,[11] our President, gave us an excellent and most helpful account of the "inaugural" symptoms of cholecystitis. A careful study of the clinical history, symptoms, and signs enables us to make a correct diagnosis in a large majority of cases.

Simple radiography shows us the shadows of some opaque gall-stones and thick-walled or calcified

FIG. 4.



Cystic adenoma at the neck of the gall-bladder, showing small black stones in the cysts. A larger stone is also present in the gall-bladder.

gall-bladders. It may show other opacities, such as calcified glands; it should always be tried before cholecystography, because it may make the latter superfluous.* With the aid of the opaque meal,

* Dr. J. M. Redding has kindly lent me the slides illustrating this part of my lecture.

radiography indicates pressure or traction of the distended or retracted gall-bladder upon the stomach, duodenum, or colon; but these methods only give correct results in about 30 per cent. of cases. The discovery of cholecystography by Graham [12] and Cole in 1923 was a great advance; it has already borne much fruit, and promises more to come, when its merits and possibilities are more widely appreciated. Whereas simple radiography, even with the aid of opaque meals, rarely gives any indication of cholecystitis or of small or non-opaque gall-stones, Graham's method helps us to an early diagnosis of all these. It is particularly valuable in demonstrating obstruction of the bile-ducts before cholecystitis has developed or become recognisable. Obstruction of the cystic duct by a stone too small to cast a shadow, by torsion, valvulation or bands, can thus be recognised and radically treated at an early stage. It also estimates the power of the gall-bladder to concentrate and to expel bile, and of the liver to secrete it. These add much to the range and value of diagnosis.

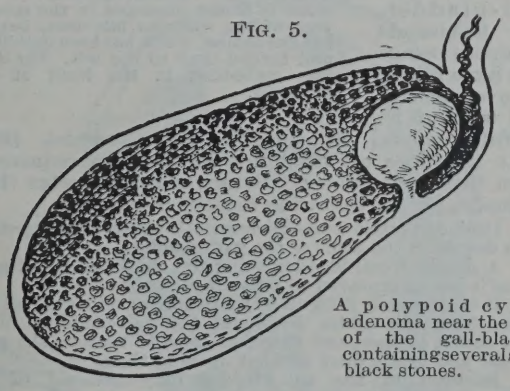
Graham's method is invaluable in the differential diagnosis of diseases of the gall-bladder from those of the alimentary and urinary tracts. The pure dye,† given with care, and in suitable doses, rarely does any harm, but it ought not to be given to patients suffering from heart disease, atheroma, abnormal blood pressure, or to those affected with chronic jaundice, cholangitis, or threatened with uræmia or hepatic insufficiency. The test is a little more accurate when the drug is given intravenously, but it is more convenient and is often considered safer when given by the mouth. Various writers estimate the accuracy of this method of diagnosis as from 80 to 97 per cent.

General Indications for Operation.

The following are the chief indications for operations upon the biliary tract:—

1. *Obstruction.*—(*a*) Of the cystic duct, as indicated by typical attacks of biliary colic with tenderness

Fig. 5.



A polypoid cystic adenoma near the neck of the gall-bladder, containing several small black stones.

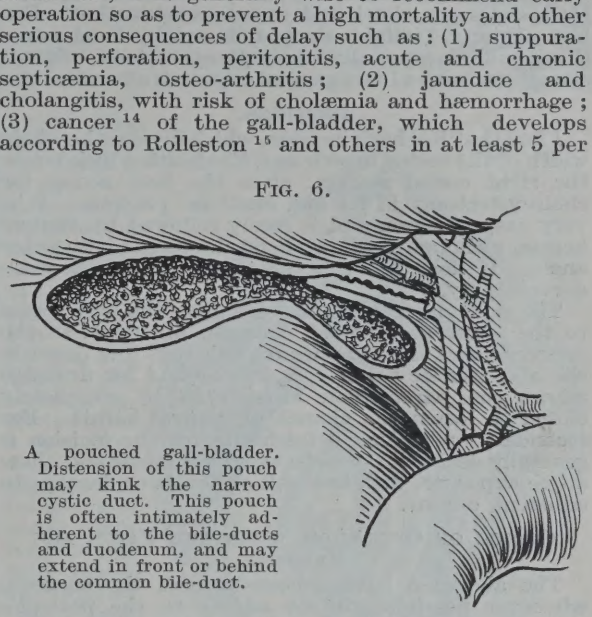
in the right hypochondrium, and often a palpable gall-bladder. Here cholecystographic evidence of defective filling may give valuable confirmation. (*b*) Of the common bile-duct, as indicated by recurrent attacks of biliary colic and jaundice, perhaps with fever; or increasing and persistent jaundice without colic, generally due to carcinoma of the pancreas or chronic pancreatitis. Great care is taken to exclude other causes of jaundice, such as cirrhosis or malignant disease of the liver.

2. *Irritation and infection* of the gall-bladder as indicated by chronic flatulent dyspepsia, pain and tenderness over the gall-bladder; and cholecystographic evidence of disease or of stones in the gall-bladder.

The mere demonstration of gall-stones or cholecystitis is not sufficient indication for operation. In many they cause no appreciable discomfort, or only such as can be relieved by medical treatment. But we have no medical means of dissolving or evacuating the stones, although stones sometimes pass spontaneously along the ducts, or escape through fistulæ into the gastro-intestinal tract.

When symptoms persist or recur in spite of medical treatment, it is generally wise to recommend early operation so as to prevent a high mortality and other serious consequences of delay such as: (1) suppuration, perforation, peritonitis, acute and chronic septicæmia, osteo-arthritis; (2) jaundice and cholangitis, with risk of cholæmia and hæmorrhage; (3) cancer [14] of the gall-bladder, which develops according to Rolleston [15] and others in at least 5 per

Fig. 6.



A pouched gall-bladder. Distension of this pouch may kink the narrow cystic duct. This pouch is often intimately adherent to the bile-ducts and duodenum, and may extend in front or behind the common bile-duct.

cent. of all cases of gall-stones. The danger of this complication is greater than that of operation; (4) intestinal obstruction by gall-stones which have ulcerated into the bowel; (5) pancreatitis; (6) hepatic insufficiency; (7) cardiac degeneration.

When possible it is safer to wait for a quiet interval before operating, so as to allow thorough investigation and preparation of the patient. Fortunately, the acute symptoms, such as colic, jaundice, and fever, generally subside under careful medical treatment; for, unlike the appendix, the gall-bladder rarely perforates or sets up spreading peritonitis. When signs of spreading peritonitis develop, or an enlarged, tender gall-bladder can be felt, and symptoms such as vomiting, fever, and rigors do not abate, or signs of acute pancreatitis develop, an immediate operation is necessary. Similarly, when jaundice, associated with fever, fails to clear up under medical treatment, an early operation offers the best hope.

These emergency operations should be limited to simple drainage of the gall-bladder or common bile-duct. Radical operations can be carried out later when the patient is better, the liver function is restored, and sepsis has subsided.

Preparation.

Much has been done in recent years to make operations safer by improving the preparation of patients, and this applies with special force to the surgery of the bile-ducts, which is beset with special dangers.

The patient is kept at rest, preferably in bed, for two or three days, and dieted. Plenty of sugar and glucose and bicarbonate of soda are given by the mouth, rectum, or even intravenously in all cases where failure of the liver functions is feared. Hexamine is given as a biliary antiseptic. All septic sources in the mouth, nose, and throat are treated in time to lessen the risk of pulmonary complications. When the patient is jaundiced and clotting of the blood is delayed, 5 c.cm. of a 10 per cent. solution of calcium chloride is injected intravenously for two or three days before the operation. If this fails to bring the clotting time to the normal, or there is marked anæmia, one or more transfusions of blood may be given with great advantage.

Anæsthetics.

Chloroform is best avoided in these cases owing to its destructive effects on liver cells. An injection of morphia gr. 1/4 and atropine gr. 1/100 is given 45 minutes before the operation. Ether

† Graham and Cole prefer the intravenous administration of 2·5 g. of phenoltetraiodophthalein. For oral administration they use 4·0 to 5·0 g. of tetraiodophenolphthalein.[13]

and oxygen are administered. Some prefer gas and oxygen, but this rarely affords enough muscular relaxation. Novocain injected into the free edge of the lesser omentum and near the neck of the gall-bladder lessens shock and increases relaxation. For bad subjects, twilight sleep, followed by local anæsthesia suffices, especially for simple operations. Spinal anæsthesia with a little gas and oxygen is also valuable.

Incisions.

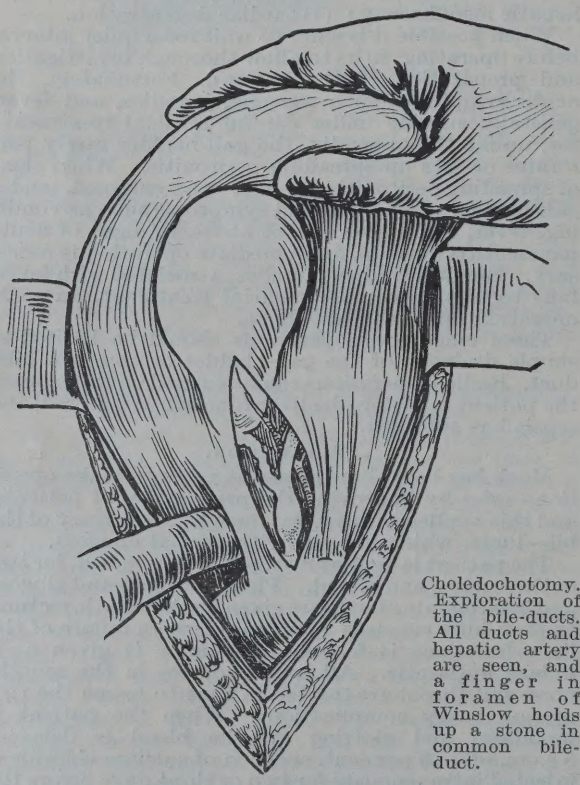
I find that Kocher's incision, which divides the whole width of the rectus muscle and its sheath 1 inch below the right costal margin, gives the best access for cholecystectomy in fat and muscular patients. It is very easy to close, and is rarely followed by ventral hernia, although it allows good drainage at its outer angle. It does not rob the rectus of an adequate nerve-supply.

The right paramedian incision gives the best access to the lower part of the common bile-duct, to the pancreas, and to the appendix adherent low down in the abdomen or pelvis. A stab wound for drainage allows the paramedian incision to be completely closed to lessen the chance of ventral hernia. For secondary operations a fresh site for the incision is generally desirable, so as to avoid adhesions and allow a free exposure, with less risk of hernia or damage to adherent organs.

Choice of Operation when the Parts are Exposed.

The abdomen having been opened, the surgeon, whenever possible without adding to the patient's risk, rapidly explores the whole abdomen so that he may discover and remove any source of sepsis. In

Fig. 7.

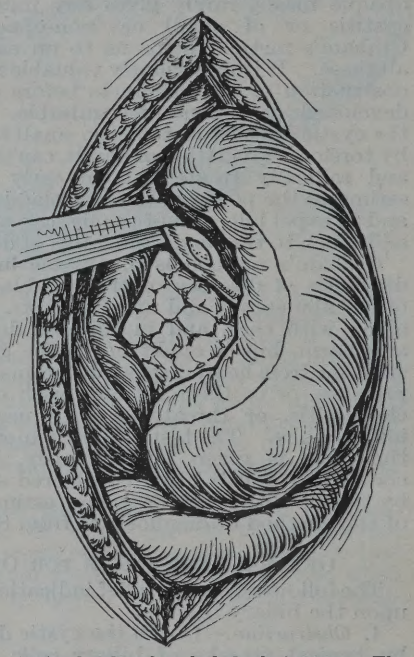


Choledochotomy. Exploration of the bile-ducts. All ducts and hepatic artery are seen, and a finger in foramen of Winslow holds up a stone in common bile-duct.

many cases it is necessary to remove a diseased appendix, and in some a gastric or duodenal ulcer may need attention. The gall-bladder and bile-ducts are examined with the greatest care, so that no stone or disease may be overlooked. It is very important to remember that stones may rest in the common bile-duct for years without causing jaundice. At my first cholecystectomy the gall-bladder contained 99 small faceted stones, but I overlooked the hundredth, which was in the common bile-duct. It caused frequent attacks of colic without any jaundice during four years before I removed it.

When the common bile-duct is dilated, especially with the gall-bladder present and active, the ducts must be palpated with extreme care, and often it is necessary to open the common bile-duct and to examine the passages from within.

Fig. 8.



Retroduodenal choledochotomy. The stone is firmly impacted in the second part of the common bile-duct, behind the duodenum, which has been mobilised and turned over to the left. The duct was embedded in the head of the pancreas.

(*a*) *When the disease is limited to the gall-bladder and cystic duct* the choice lies between cholecystectomy and cholecystostomy (Fig. 3). It is the ideal of the surgeon to operate while the disease is limited to the gall-bladder and cystic duct so that he can eradicate it. Fortunately, the gall-bladder is not indispensable, although it has been shown to have several interesting functions. Certain animals, such as the horse, the deer, and the rat, have no gall-bladder, and thousands of human beings who have had it removed get on well without it. Skilful removal in suitable cases carries little risk; therefore we need not hesitate to remove it when this is necessary. Removal is far better than drainage, for the following reasons:—

1. Drainage rarely cures cholecystitis because the infection lurks deeply in the walls of the gall-bladder.
2. A diseased gall-bladder being the chief factory of gall-stones is better removed to prevent recurrence.
3. It is extremely difficult to make sure of removing all the stones from the cystic duct and the gall-bladder. It is often easier, cleaner, and therefore safer to remove the gall-bladder and cystic duct without opening them.
4. Excision of the gall-bladder may get rid of an unsuspected early cancer or precancerous condition. The results of such operations are extremely favourable. I have several patients living and well many years afterwards, but it is usually too late to cure a cancer of the gall-bladder which has been recognised before the abdomen has been opened.

The chief indications for cholecystectomy are irreparable wounds and injuries or diseases limited to the gall-bladder and its duct. The most important of these diseases are: acute, chronic, and recurrent cholecystitis, especially when associated with gall-stones; typhoid infection, making a patient a typhoid carrier; gangrene, perforation, empyema, hydrops, or mucous fistula of the gall-bladder due to obstruction of the cystic duct by stone, torsion, kink, band, or stricture; fibroma, adenoma, papilloma, or carcinoma and biliary fistula or chronic jaundice due to kinking of the common bile-duct following cholecystostomy (Fig. 4).

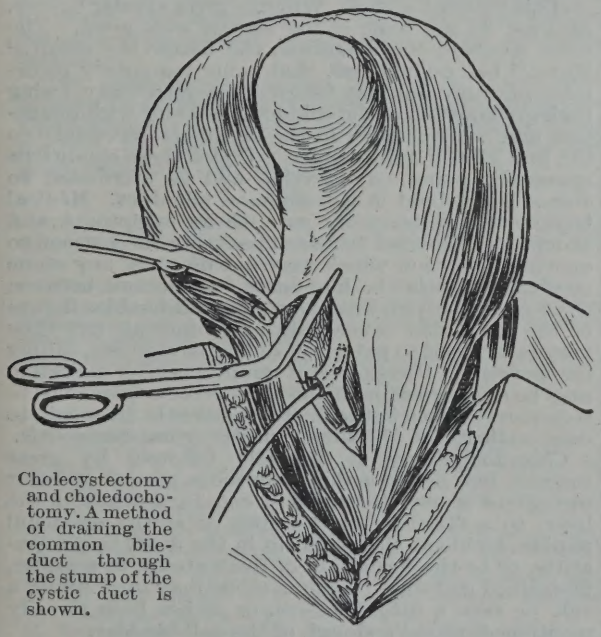
If every gall-bladder is carefully examined after removal, I believe that more new growths will be discovered. The figures illustrate some adenomata which I have removed; several contained small black stones. I think they have an important bearing upon stone and cancer formation (Fig. 5).

A. M. Shipley[16] has collected 22 cases of acute torsion of the pendulous gall-bladder; cholecystectomy was performed on all but one of these cases. This condition is almost limited to women over 60 years of age.

It is not wise to undertake cholecystectomy when the patient is very ill, old or feeble, or when the mechanical difficulties and dangers of the operation are too great for the operator. Cholecystostomy is safer under such circumstances, care being taken to remove all the stones, if possible. If the symptoms recur, secondary cholecystectomy can be performed under more favourable circumstances. Neither should cholecystectomy be attempted when there is chronic jaundice with consequent risk of hæmorrhage, unless the normal coagulation time has been restored by treatment; nor when there is infective cholangitis or hepatic insufficiency. Cholecystectomy should never be performed unless it is certain that the common bile-duct is patent.

It is easy enough to recognise gross disease of the gall-bladder, but slight abnormalities are as easily overlooked. If the clinical history and examinations, especially cholecystography and the finding of bacteria in the duodenal bile, incriminate the gall-bladder, it is generally wise to remove it although it may not look very abnormal. Other important signs of disease are: thickening, with change of colour to pink or grey; small stones often difficult to feel; white spots indicating cholecysterosis or strawberry gall-bladder; an excess of fat in the wall; enlargement of the sentinel lymphatic gland near the cystic duct; evidence of hepatitis, perihepatitis, and especially subcapsular fibrosis near the gall-bladder; and adhesions to the duodenum or colon (Fig. 6). Kinking, bands, adhesions, and deformities at the neck of the gall-bladder may be concealed until they have been fully

FIG. 9.



Cholecystectomy and choledochotomy. A method of draining the common bile-duct through the stump of the cystic duct is shown.

exposed after dividing their peritoneal sheath. I have demonstrated several good examples of valvular obstruction of the neck of the gall-bladder while operating for Dr. Hurst at New Lodge Clinic.

(*b*) *When the common bile-duct is affected*, obstructive jaundice generally follows, and is often due to (1) stone in the common bile-duct; (2) carcinoma of the head of the pancreas or bile-duct; (3) chronic pancreatitis.

The choice of operation is between choledochostomy, cholecystogastrostomy, and cholecystostomy (Fig. 7). When jaundice is associated with colic, it is generally due to impaction of stone or other foreign body in the common duct. It is far better to remove the obstruction, if possible, than to make a short-circuit between the gall-bladder or bile-duct and the stomach or intestine. A stone impacted in the lower part of the common bile-duct is best moved back into the first part of the duct and held there before the latter is opened. If the stone cannot be moved back and extracted from the first part of the duct, it may be necessary to mobilise the duodenum and to remove the stone from behind (Fig. 8). When the stone is impacted at or near the duodenal papilla, the trans-duodenal route is a good and safe one—far safer than prolonged efforts to displace or to crush the stone (Fig. 9). Whenever the first or second part of the common bile-duct has been opened I insert a tube for drainage; once after closing the duct I had to remove a fibrinous clot from it ten days later, and in another case in which the drainage-tube did not enter the duct, bile accumulated in the lesser sac of the peritoneum, causing serious symptoms which were relieved by drainage some days later (Fig. 11). On various occasions I have found foreign bodies (other than stone) in the common bile-duct, such as hydatid daughter cysts discharged from the parent cyst in the liver, and a slough derived from the turned-in edge of the gall-bladder after cholecystostomy.

FIG. 10.

Duodenocholedochotomy. The second part of the duodenum is brought into the wound and packed off. Vertical incisions are made in the anterior wall of the duodenum and end of the bile-duct.

If the jaundice is due to chronic pancreatitis or carcinoma of the head of the pancreas, I prefer cholecystogastrostomy to any other treatment. It is much better than draining the gall-bladder or common bile-duct to the surface of the skin, and it appears to be safer, easier, and better to drain the distended gall-bladder into the stomach than into the duodenum, small or large intestine. Fistula or obstruction occasionally followed an anastomosis with the duodenum; kinking and vomiting often followed union with the jejunum; and infection of the liver is especially likely when the gall-bladder is joined to the colon. Chronic pancreatitis, with jaundice, is generally cured by cholecystogastrostomy (Fig. 11). I have several patients who have survived many years in good health. The operation is worth while, even for cancerous obstruction of the common bile-duct, for the jaundice with intolerable itching and risk of bleeding are cured, and life may be prolonged in comfort and efficiency for many months or even for years.

RECONSTRUCTION OF THE BILE-DUCTS.

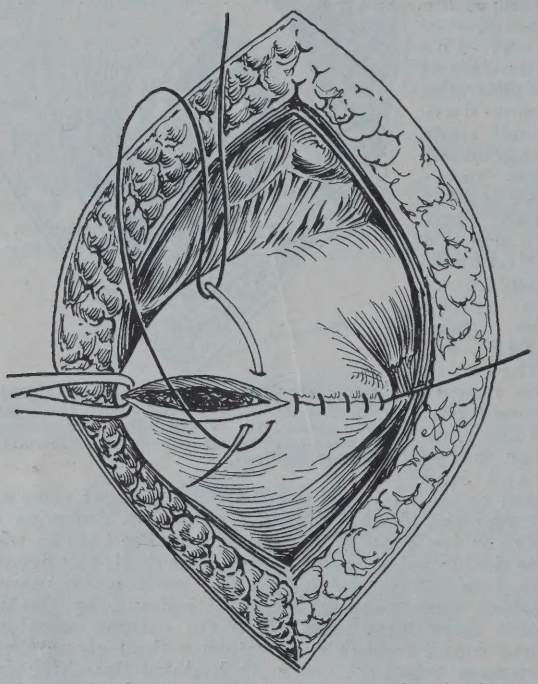
Reconstruction of the bile-ducts is required occasionally after excision of growths, but more commonly after accidental injuries during operation. It is easier, and far better, to make the necessary repair

immediately, before inflammation has changed and confused the anatomical appearances, and before ascending hepatitis and hepatic insufficiency have developed. Direct suture over a rubber tube is usually practicable in early cases. Later it may be impossible to find or to make use of the lower part of a divided duct. Then it becomes necessary to join the upper, often dilated, part of the duct to the duodenum, either by direct suture after the Mayo[17] method, or by a flap operation after Walton's[18] excellent plan. These operations are notoriously difficult and dangerous.

RESULTS.

Mortality.—The death-rate of operations upon the gall-bladder and common bile-duct is surprisingly low, considering the complicated nature and difficulties of these operations. Graham and his colleagues, in their last 309 cholecystectomies for both acute and chronic cholecystitis, with or without stones, had a mortality

FIG. 11.



Duodenocholedochotomy. The wound in the duodenum is drawn into the transverse position and closed with two layers of catgut suture and sealed over with a flap taken from the mesocolon just below it.

of 2·8 per cent. During the same time they performed 11 cholecystostomies with a mortality of 18 per cent., this operation having been performed only in those cases which were the worst risks. The death-rate of choledochotomy is naturally higher because the patients requiring it are often bad subjects, who have suffered for years and have developed complications such as secondary heart disease, cholangitis, hepatitis, or pancreatitis, and are now peculiarly liable to hæmorrhage and pulmonary complications, and above all are apt to suffer from hepatic insufficiency or nephritis. Graham had a mortality of 11·9 per cent. in 42 cases of removal of stones from the common bile-duct. Infective or suppurative cholangitis makes the mortality very high.

Between July, 1916, and January, 1929, there were 251 operations for gall-stones and cholecystitis in my wards at Guy's Hospital, with 7 deaths—a mortality of 2·8 per cent. 202 of these patients were women, with 4 deaths; 49 were men, with 3 deaths. My junior colleague, Mr. Lancelot Bromley, operated upon some of these patients, and my surgical registrar operated on some under my supervision. During the last ten years I operated upon 175 private patients for all kinds of diseases of the gall-bladder and bile-ducts, with 11 deaths—a mortality of 6·3 per cent.

There were	10	cholecystotomies, with	2 deaths.
,, ,,	135	cholecystectomies, ,,	4 ,,
,, ,,	25	choledochotomies, ,,	5 ,,
,, ,,	5	cholecystogastrostomies, with	no death.

The two deaths following cholecystotomy were due to perforation of the gall-bladder causing subdiaphragmatic abscess in one case and general peritonitis in the other. Two deaths following cholecystectomy were due to pneumonia and pulmonary embolism. Another death was due to perforation of the gall-bladder with suppuration in the liver; and the last occurred in a patient suffering from severe hæmolytic anæmia secondary to streptococcal infection of the gall-bladder. The five deaths following choledochotomy were due chiefly to hepatic insufficiency in late cases. Of my private patients, 126 were women, with 7 deaths; 49 were men, with 4 deaths. There were more than 3 women to 1 man in my lists of 426 operations. D. P. D. Wilkie and others have also found the mortality higher in private patients, who are apt to wait too long and to try various treatments before operation.

It is interesting that both Graham and Blalock also find the risk of all these operations much greater in men than in women.

Ultimate Results—Cholecystostomy affords complete and permanent relief of symptoms in only about 45 per cent. of cases.[19] The persistence or recurrence of symptoms are often due to leaving some stones behind, to the persistence of inflammation in the walls of the gall-bladder, or to the formation of new stones. Secondary cholecystectomy or choledochostomy are often required.

Cholecystectomy affords complete and permanent relief in about 86 per cent. of cases.[20] Müller[21] found the results completely satisfactory in 84·4 per cent. of stone cases and 70 per cent. of the cases of cholecystitis without stones. Whipple gives similar figures. At least 80 per cent. of my results were good. The more accurate the diagnosis, the better the result.[22] Hurst[23] has pointed out that some temporary recurrence of symptoms may follow cholecystectomy, owing perhaps to spasm of the sphincter of Oddi with dilatation and other changes in the bile-ducts, secondary to the loss of the gall-bladder. Under these conditions spasmodic pains may develop and be attributed to stones left behind in the common bile-duct. Medical treatment will generally cure these symptoms and should be well tried before submitting the patient to another operation which may not discover any stone or obstruction in the bile-ducts. Adhesions between the stomach or duodenum and the gall-bladder fissure of the liver may cause pain and vomiting, but they very rarely lead to pyloric or duodenal stenosis, calling for operation. Persistence of symptoms after operation may be due to residual infection in liver or pancreas, to stones overlooked in the ducts, to errors in diagnosis, to osteo-arthritis of the spine, spastic or mucous colitis.

Choledochotomy is generally followed by great success, but occasionally symptoms persist or recur owing to a stone left behind or coming down from the liver, to a stricture in the duct or at the duodenal papilla, to blood clot or fibrin in the duct, to pancreatitis, or to the formation of fresh stones in a septic, ill-drained gall-duct; such a stone may form round a silk or even a catgut suture, or as has been already mentioned, round a slough of the gall-bladder.

CONCLUSIONS.

Infective inflammation of the gall-bladder is very common, and is difficult to cure medically. It often causes gall-stones, and sometimes cancer, to form in the gall-bladder.

Timely radical operation has a low mortality, and offers a very good chance of cure. Delay often leads to serious and dangerous consequences. The results of operations upon the gall-bladder and bile-ducts are extremely satisfactory, and compare favourably with those obtained in any other branch of surgery.

(*References at foot of opposite page*).

THE SULFOSIN TREATMENT OF GENERAL PARALYSIS

AND OTHER DISORDERS.

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At the thirteenth Northern Congress of Internal Medicine at Copenhagen in June, 1927, I gave a preliminary report [8] on the therapeutic effects I had observed after the administration of sulphur in the form of sulphurated oil ("sulfosin"). In general paralysis, repeated injections of sulfosin, producing a rise of temperature to 104° F. or higher, had a therapeutic effect similar to that of malarial treatment without its dangers and drawbacks. Further, I pointed out that the sulfosin treatment would be very likely to prove effective in other syphilitic and certain non-syphilitic lesions of the central nervous system.

My subsequent results have confirmed this view, which has now been supported by several other authors, who seem to assign to sulphur treatment a prominent part in the therapy of these lesions.

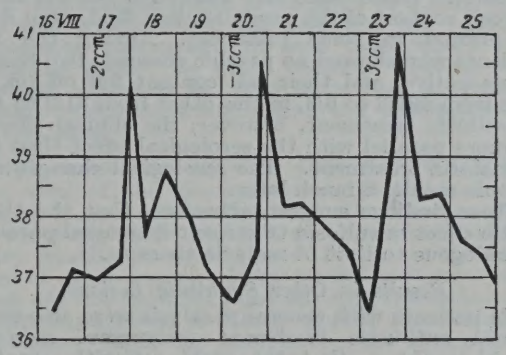
Sulfosin treatment is innocuous and can be applied everywhere—even in the most remote corners of the world—without any need for special hospitals or clinics. It is perfectly controllable; the fever can be regulated very accurately by the size of the injections, and can be made to subside at any time by their discontinuance. It can be instituted unhesitatingly even in infancy and old age, and in patients who are suffering from complications—even advanced circulatory lesions and albuminuria—that contra-indicate infection therapy. Another advantage is that the treatment may be given successfully to patients who have proved refractory to infection therapy (or in whom later injections did not take), and also to patients who cannot stand any other antiluetic treatment.

The preparation, sulfosin leo,* is a 1 per cent. solution or suspension† of sulphur (sulfur sublimatum subtilissimum) in olive oil, sterilised, according to my method, by heating in a hot-air oven, and sealed in ampoules of 1 to 10 c.cm.

Technique.

Sulfosin is injected deeply intramuscularly on the lateral side of the femur, preferably between the upper and middle thirds. The morning is the best time for injection, since the maximal temperature sets in about 12 hours later (8 to 14 hours). As the maximum is of very short duration, the temperature should be noted every hour or half hour when six to eight hours have elapsed after the injection, until the maximal height and subsequent fall have been recorded. It is important to know the maximal temperature reached, because the size of the injections will depend on it, the treatment aiming at a rise to 40° C. (104° F.) or more (see figure).

The initial dose is small (0·5 to 1·0 c.cm.), and the dose is increased by about 1 c.cm. at each injection until it eventually amounts to 10 to 12 c.cm. The temperature rises with the increase of dose. The injection is repeated when the temperature has dropped to normal—usually within 24 to 48 hours—so that the injections are given at a rate of about two a week. As a rule, ten injections constitute a series, and a new series may be started about two weeks after the preceding one. Usually two or three series are sufficient, but more may be given if desirable. At the site of injection there is often some tenderness for one or two days, culminating with pains in the femur radiating downwards; these pains may be treated with hot wet dressings or electric heat. Persisting tenderness and stiffness of the femur are treated by massage. A temperature of 104° F. is occasionally accompanied by a brief spell of indisposition.



Temperature chart (centigrade) showing rises of temperature as a result of injections of sulfosin.

Results in General Paralysis.

General paralysis was the first disease in which I experimented with this therapy. In February, 1924, a patient with tabo-paralysis was admitted to my department, and I had at that time no way of giving malaria treatment. So I ventured to treat him with injections of sulphurated olive oil, and the experiment turned out far more successful than could have been expected. He was admitted as an irretrievable wreck, and he was discharged in full remission, restored to life and to his profession, at which he is still working. Since then I have treated 12 cases, some more recent and some non-treated cases of long standing. Of these 12 cases, 4 were discharged in full remission, with fully restored capacity for work, and apparently cured (observation periods: 5, 4, 3, ½ years); 1 in good remission, but with a psychic defect, lack of initiative (observation period: 2 years); 1 in remission (treatment not completed); and 1 somewhat improved. Four have shown no change in their condition and 1 died (treatment not completed, but serological improvement; the patient died from pyelonephritis and pneumonia). Thus 58 per cent. of the patients were discharged in remission, including 33·3 per cent. who were apparently cured, and had fully recovered their capacity for work.

Similar favourable results have recently been obtained by Marcuse and Kallmann[1] with more advanced cases than are generally met in clinics and hospitals. In 32 cases these authors obtained a marked improvement (with a prognosis of "persisting improvement") in 19 per cent. In 41 per cent. of the cases the authors found "fair to marked improvement" in the somatic as well as in the psychic condition. The fact that these patients were not returned to their families was only due to "unfavourable domestic conditions." Warstadt[2] has treated 11 patients with sulfosin. He finds its favourable effect

* Manufactured by Lovens Kemiske Fabrik, Copenhagen.

† The suspended sulphur can readily be dissolved by heating the ampoule over a small flame (an alcohol burner, for instance) before withdrawing its contents.

Bradshaw Lecture: References.

(*Continued from previous page.*)

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to be unquestionable, and he concludes that this remedy "appears to be a substitute for malaria, and preferable to other remedies of this kind." Marcuse and Kallmann, as well as Warstadt, report several cases of favourable effect where malaria treatment had failed, and Pires [3] records two cases that were refractory to malaria and in which sulfosin treatment gave good results. Stiefler [4] is satisfied with the results he has obtained with sulfosin treatment. He says: "From our observations sulfosin appears to be a very valuable fever-producing remedy; its efficacy is evident from its influence on the clinical symptoms as well as on the serological findings." Marcuse and Kallmann conclude that sulfosin not only eliminates the dangers connected with an infectious process but, in addition to its equally great power of producing fever, it has a roborant curative effect.

I have examined the serological findings in my patients as far as possible, and found the Wassermann reaction negative in the four patients who were discharged in full remission (observation period: ½ to 4 years). These cases also showed a marked fall in the cell content of the cerebro-spinal fluid, even down to normal in some instances. Among the four patients who showed no psychic changes, two became sero-negative, and their cell content fell off (in one case from 494/3 to 6/3, in the other from 31/3 to 4/3). In sulfosin treatment, however, the clinical effect is no more parallel with the serological effect than it is in malaria treatment. The serological changes may become manifest much later.

These findings suggest, therefore, that the therapeutic effect of sulfosin treatment in general paralysis is analogous to that of malaria therapy.

Results in Other Syphilitic Lesions.

My patients with general paralysis were also under general antiluetic treatment (salvarsan, mercury, and bismuth), so that one could not with certainty attribute the favourable effect on the humoral syndrome to the action of sulfosin alone, even though our experiences so far really suggest, I think, that the sulfosin treatment is the principal factor. To decide whether, or to what extent, syphilis is influenced by treatment with sulfosin alone it was necessary to treat some syphilitics exclusively with sulfosin. Four patients with cerebro-spinal syphilis were accordingly treated with sulfosin alone.

Before treatment, the first patient (female, aged 31) showed a blood Wassermann of 0.0.0.10.100,‡ and a cerebro-spinal Wassermann of 0.40.100. Her cell count was 150/3. After eight injections of sulfosin the Wassermann reaction in both blood and cerebro-spinal fluid was negative, and the cell content had dropped from 150/3 to 10/3 (within two months).

In the second patient (female, aged 54) the Wassermann reaction in the cerebro-spinal fluid changed within five weeks from 0.0.0.0.0.0.60.100Σ25 to 0.10.60.100Σ2·5 units as a result of 12 sulfosin injections. The cell content subsided at the same time from 240/3 to 5/3.

The third patient (male, aged 57) had been infected with syphilis 32 years before, and had had no antiluetic treatment for 30 years. Within three months 12 sulfosin injections changed his Wassermann reaction in the blood from 0.20.60.100Σ25 to perfectly negative (Σ0). At the same time there was a most remarkable change in the clinical manifestations. On admission he was lying in bed, a hopeless wreck, incapable of shutting his eyes or chewing his food, with signs of bulbar paralysis and total facial paralysis; after three months' treatment he was capable of resuming his work as a drawing-master, and he has attended to his duties during the past 18 months.

In the fourth patient (female, aged 21) the blood Wassermann reaction changed from 0.60.100Σ25 to a complete negative at the same time as the Wassermann reaction in the cerebro-spinal fluid changed from 20.60.100Σ5 to 20.100Σ1·6. The cell content dropped from 231/3 to 23/3. These changes were accomplished by eight sulfosin injections in one month.

As the changes in the serological syndrome of these patients are far in excess of any spontaneous variation, we may conclude that sulfosin has an antisyphilitic effect. This conclusion is not shaken by the possibility that the same patients might have improved in a similar way on some other antiluetic treatment. Consequently, in sulfosin treatment we have a new, hitherto unknown, remedy against syphilis of the nervous system.

I then felt justified in applying sulfosin treatment to some syphilitics who had not shown any signs of cerebro-spinal syphilis and, finally, in making the same experiment on some patients with recent syphilis.

I treated one male who suffered from tertiary syphilitic ulcerated gumma of the left leg. He had been infected and treated 20 years before, but had had no subsequent treatment. On admission the Wassermann reaction in the blood was 40.100. After eight sulfosin injections it was negative with heart extract but positive with syphilitic extract, and the gumma had disappeared.

I then applied sulfosin treatment to a couple of cases of recent syphilis.

The first patient (female, aged 18) had her first eruption with large, confluent, excorated and partly hypertrophic papules on the genitalia. Sulfosin treatment was started on the day after her admission. Only five days later—after no more than three sulfosin injections—I was astonished to find that the papules had gone. Two days later even the marks from the papules had disappeared, and they did not show again. When five sulfosin injections had been given, the Wassermann reaction in the blood had increased very considerably (to 0.0.0.60.100 with Σ100), but it soon began to fall off, and was perfectly negative after 15 injections.§

The other patient (a female, aged 21) had her first eruption with papules in the palms and macular exanthema on the genitalia. After eight sulfosin injections the eruption disappeared and the Wassermann reaction in the blood went to negative.

I have also treated a couple of children (a girl, aged 7, and her brother, aged 5) who were suffering from congenital latent syphilis. They showed no no signs of any particular discomfort, although their temperatures went up to 105° F. In both cases the Wassermann reaction became less positive; in one case it went down to negative with heart extract, weakly positive with syphilitic extract, and Σ0.

I have treated six patients who had latent syphilis. In four of these the reaction became negative within the period of observation. I have also given sulfosin to six patients with syphilitic aortitis; all showed clinical improvement. Two of these patients suffered from angina pectoris; this condition disappeared in one of them, and was considerably improved in the other. A pre-existing albuminuria disappeared in one patient. Finally, there was one patient (male, aged 52) who suffered from aneurysm of the innominate artery and aorta, and who had not been treated for 36 years.

On admission he was in very bad condition, and his blood Wassermann reaction was 0.0.60.100Σ150. Sulfosin treatment was instituted as a last resort, and he received seven injections, with the dose increasing from 0·25 to 2 c.cm., which gave a maximum temperature of 104·6° F. without any discomfort worth mentioning or any particular heart signs. On this treatment the Wassermann reaction in his blood fell to 20.100Σ25. When admitted to hospital the patient had been cyanotic and so dyspnœic that he could not turn in bed nor sit upright, and he could take only liquid food. During the treatment, however, he kept on improving far more than could be expected, and six weeks after admission he was able to walk about and to swallow solid food. Along with this improvement the pulsation over the right clavicle disappeared, and both radial pulses beat alike, a result that was as conspicuous as it was unexpected. One could have sworn that this change was impossible, if one had not seen it develop with one's own eyes.

Beside the remarkable clinical result of sulfosin treatment, this case also shows an unquestionable

‡ All the Wassermann tests are done by the State Serum Institute, Copenhagen. The titration is done in series, using the following quantities of serum: 0·2, 0·1, 0·05, 0·02, 0·01, 0·005, 0·0025, 0·001, 0·0005, and 0·00025; and the figures indicate the hæmolysis in the respective tubes containing amounts of serum in this order. While 0 indicates the absence of any hæmolysis, maximal positive reaction, 100 designates complete hæmolysis, negative reaction. The values between 0 and 100 are the intermediate degrees of hæmolysis.

§ I have several times noticed this variation in the Wassermann reaction during sulfosin treatment, particularly in cases of a recent date. I consider it a biological reaction.

effect on the Wassermann reaction, and illustrates how well sulfosin may agree even with a patient who has such a severe lesion of the main arteries.

I have already mentioned a case which shows that sulfosin may be given unhesitatingly to patients with renal lesions and albuminuria. I add three more instances of this kind.

One of these patients suffered from chronic nephritis with marked albuminuria, which was not aggravated in spite of seven sulfosin injections (with a maximum temperature of 104·6° F. In another patient albuminuria set in after the administration of 0·15 g. of neosalvarsan with 0·25 g. of bismuth; albumin disappeared from the urine on further treatment with sulfosin alone (two series of ten injections, each amounting to 19·5+49 c.cm. of sulfosin with maximum temperatures of 104·9° F. and 105·1° F. The third patient, who had hæmorrhagic nephritis, received ten sulfosin injections (47·5 c.cm., all told, with a maximum temperature of 104·2° F.), together with 3·9 g. neosalvarsan. On this treatment the urine became free of blood as well as of albumin.

These findings show conclusively, I think, that in these different forms of syphilis sulfosin has an unquestionable effect—not only on the syphilitic products, but also on the infection itself—a fact not previously known. We do not know how this effect is brought about, but I think we have some suggestive points. Sulfosin treatment is not an infection therapy like malaria and recurrent fever therapies, but has this in common with them—that when the active agent is introduced into the sick organism it sets up a reaction which is accompanied by a considerable rise of temperature. This rise of temperature, however, is essentially different from the fever in malaria and typhoid vaccine therapy; for the rise of temperature after sulfosin is more acute than its fall, which is considerably prolonged, so as to make the base of the fever phase unusually wide, and produce a fever curve that is quite characteristic. While this fever is subsiding it frequently runs an intermittent course, which also appears to be characteristic (see figure). This reaction may be non-specific—a sort of "Reizkörper" effect—and especially pronounced in metasyphilitic conditions, but apart from this general effect I think the sulphur has also a relatively specific action, like other "chemically avid" substances.

When given in the proper way sulfosin is a perfectly harmless remedy which can be used with very serious cardiac and renal lesions. Even pregnancy or pulmonary tuberculosis do not positively contra-indicate its use—as I have learned in several cases—if only moderate rises of temperature are induced. It suits patients of all ages. In congenital lues I have given it to two children at the age of one year, and even to a child of three months (starting with 0·1 c.cm.).

Sulfosin Combined with Other Antisyphilitic Measures.

Even though these experiments indicate that sulfosin has quite a marked antiluetic effect, I still think that, as a rule, it should not be used alone but rather in combination with our present antiluetic treatment (neosalvarsan, mercury, bismuth), so that the latter is given either concurrently with or immediately after the sulfosin treatment. I have had plenty of opportunity of establishing that this combination is well tolerated. I have given this treatment to six patients with tabes dorsalis; four were improved. L. W. Harrison has also seen some good effect from the treatment in one case of tabes dorsalis. I have had no opportunity of trying it in tabetic optic atrophy, but Winkler[5] reports a good effect in three out of five cases. Stiefler has treated five cases of this kind without any effect on the optic atrophy, while other tabetic manifestations were partly improved. Amongst other syphilitic eye lesions where the sulfosin treatment may prove of value, one may mention parenchymatous keratitis. Of eight children with congenital syphilis, four had parenchymatous keratitis which improved and cleared up. In my opinion sulfosin had a favourable effect. One of these children was also suffering from osteoperiostitis, which disappeared completely. Harrison has treated two cases of interstitial keratitis with sulfosin, and he has told me that "particularly in one, the effects of the injections of sulfosin were very good, the keratitis clearing more quickly than I have ever seen it."

I have also given sulfosin with other antiluetic treatment to two patients before they had any eruption of the secondary stage, and to 13 patients with the first eruption of syphilis. In all 13 patients the Wassermann reaction became negative, after a preliminary increase in strength in five. The papules and exanthema disappeared rapidly (within 3 to 28 days) in ten of these patients, but more slowly in the other three. In two of the latter cases the neosalvarsan treatment had to be discontinued on account of violent reactions. I have treated four cases of later eruption. Here the papules and exanthema disappeared in 7 to 22 days, and the Wassermann reaction became negative in all.

From the treatment of the 19 patients we most certainly feel that we have obtained a more rapid therapeutic effect, clinical as well as serological, by adding sulfosin to the other treatment. So I think that sulfosin ought to be given as a part of the antiluetic treatment to patients who are admitted to hospital, particularly in such cases where other treatment cannot be given without eliciting some reactions, especially as I have never seen any sulfosin reaction which contra-indicated the continuance of the treatment.

Sulfosin and Non-syphilitic Lesions of the C.N.S.

In view of the favourable results obtained with sulfosin in general paralysis and other cerebro-spinal lesions of syphilitic origin, it was no far-fetched idea to try whether it would prove effective in the treatment of other lesions of the central nervous system which are not syphilitic, but strongly resemble metasyphilitic affections in their clinical manifestations and course. Epidemic encephalitis and disseminated sclerosis resemble syphilis in this way, and may improve somewhat on malaria or typhoid vaccine treatment. I therefore felt justified in trying sulfosin.

I paid particular attention to postencephalitic parkinsonism. I have treated five cases of this kind; four of them, at any rate, were definitely postencephalitic. All five improved—subjectively as well as objectively—after treatment with sulfosin; in four the improvement was very marked, and directly followed the treatment. The patients were very pleased with the treatment—in spite of the subjective discomfort it causes—and it was repeated in several instances at their own request.

In 15 cases of postencephalitic parkinsonism Stiefler found some, although a moderate, improvement. It is possible that sulfosin may also give good results in other manifestations of chronic encephalitis, but my experience in this respect is so limited that I have nothing to say about it. Unfortunately I have not had any opportunity of trying the treatment in the acute stage of epidemic encephalitis; it is not altogether unlikely that the chances of recovery on sulfosin treatment are better in the acute stage than during the later course. In one of my cases of parkinsonism the encephalitic ætiology was questionable; it may have been a case of paralysis agitans. As this patient was benefited by the treatment I have adopted sulfosin therapy for the treatment of paralysis agitans. In this connexion I may mention a case of paralysis agitans which Dr. H. Verploegh, of The Hague, has been treating after consulting with me; this patient "has improved most remarkably—even after four injections of sulfosin."

I have tried sulfosin treatment in three unquestioned cases of disseminated sclerosis, but without any recognisable therapeutic effect. The patients had imperative urination immediately after the injections, probably the result of a local action on the gliomatous process in the medulla. This effect was quite transitory. A similar local effect has been observed by Dr. Ernst Bichel (Wiesbaden) in a patient who, he thinks, showed a continuous progressive improvement after five series of sulfosin injections. Stiefler has

treated 12 cases of disseminated sclerosis with sulfosin, and reports some really encouraging results. He says: "At any rate, it has served me well in several cases which did not respond enough to typhoid vaccine. Sulfosin is also preferable to treatment with typhoid vaccine when the patient is markedly debilitated or suffers from circulatory disturbances."

Sulfosin Treatment of Dementia Præcox (Schizophrenia).

In a previous paper on sulfosin treatment I suggested that the remedy might prove effective in dementia præcox. I have since used it in six cases. The treatment has been completed in three, all of whom had such a good remission that they were able to resume their work—one of them with perfectly normal mentality (observation time: 10, 10, and 5 months). Another patient improved somewhat, but nothing is known of his later condition, and one patient showed signs of beginning remission. The undoubtedly favourable result I have obtained in this way is confirmed by a report from Marcuse and Kallmann,[1] who have treated no less than 40 cases of schizophrenia by this method. In 16 of these patients they found a more or less pronounced improvement in such direct connexion with the treatment that they do not question its efficacy. They give four typical histories of patients who recovered and returned to their work. Favourable results are also recorded by Salinger,[6] who has treated 16 cases of schizophrenic psychosis and found improvement in 25 per cent. In treating 50 cases of this kind Loberg[7] has found a similar effect from sulfosin. The final results, however, are not yet available. In view of these findings one can hardly doubt that sulfosin is an effective remedy against schizophrenia. This is very significant; an effective treatment of dementia præcox is particularly desirable because this disease attacks the young and—apart from spontaneous remissions—puts the unfortunate patients in such a pitiful condition that a desire to help them is dictated just as much by compassion for the patients themselves as by the social importance of their recovery.

Summary.

1. In the human organism the administration of sulphur in the form of sulfosin (sulphurated oil) sets up a febrile condition of short duration. Repeated injections may result in a therapeutic effect on a variety of lesions of the central nervous system.

2. The chief of these lesions are general paralysis and other syphilitic lesions of the central nervous system. Experiments on fresh and older cases of syphilis have also shown an unquestionable antiluetic effect from sulfosin injections.

3. Sulfosin treatment may also have a favourable effect on other non-syphilitic lesions of the central nervous system (chronic epidemic encephalitis with parkinsonism, dementia præcox, and disseminated sclerosis).

4. The therapeutic effect produced by sulfosin treatment appears primarily to be a general reaction, associated with the rise of temperature; but there is probably also a specific sulphur effect.

5. Sulfosin treatment is preferable to infection treatment. The results seem to indicate that sulfosin has the same therapeutic effect as infection treatment without its dangers and drawbacks, as sulfosin is perfectly safe and its use is not restricted to special hospitals.

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PUNCTURE OF THE CHEST:

ITS OCCASIONS AND TECHNIQUE.*

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THE first principle in the technique of puncture of the chest is that it should be done exactly as the operator would like to have his own chest punctured. This would *not* mean no local anæsthetic, a blunt needle, an ill-fitting trocar and cannula, hitting a rib from failure to determine the exact direction of the rib and the intercostal space, breaking off a needle or producing by faulty technique a pneumothorax, so that the next man cannot possible tell what is inside. Yet all of these things happen.

The skin must be well sterilised with tincture of iodine. If the patient is very nervous or very young, ethyl chloride on the skin may be a desirable preliminary. Usually, however, I prefer to use the finest hypodermic needle for the skin puncture, changing it to a longer one when penetrating the intercostal space. The needle must be long enough to enter the pleural space without going up to the hilt. Otherwise it may break off and not be found again. If the needle is not perfectly sharp it must be sharpened on a small stone, which can be obtained from any surgical instrument maker. The point must be perfect, not like a fish-hook, as it is sometimes. The needle and the piston must both fit perfectly. No air must enter, for if it does it is impossible to be certain if air-bubbles are being drawn from the lung or the pleural cavity or are due to a faulty syringe. To test this put the end of the needle in the solution and pull back the piston forcibly. A vacuum should be formed and slowly fill with fluid; no air should enter. It is a severe test but the instrument should stand it. Fill the syringe with 2 per cent. sterile novocain [1] and put two fingers in the intercostal space to note its direction. Make a bleb of novocain with the fine needle inserted horizontally just under the epidermis. With the needle (or the larger needle) now vertical, push very slowly through the intercostal muscles, asking the patient to say when any sensation is felt. The intercostal muscles are devoid of sensation; when the patient begins to feel, the needle is approaching the nerve-endings of the parietal pleura. Now squirt out forcibly a good amount of novocain, then advance the needle a little further, asking if the patient feels anything. If the answer is "yes," give more novocain. If "no," go on. Soon the needle will enter either the pleural space or the lung or a solid area, and with gentle handling of the syringe the difference can usually be appreciated. Now withdraw the piston. If fluid is present, it will enter the syringe, and all that is necessary is done.

If nothing comes, it may be because there is nothing to come, or because there is pus too thick to go through the needle, or a new growth. Therefore a larger and longer needle is used. The patient is warned not to move and the new needle is pushed through the anæsthetised track; no pain whatsoever should be felt. If there is any pain, use more novocain; any amount can be used.

Sometimes it is very difficult to push the needle or the trocar and cannula through the skin. This means that the needle is not really sharp or that the shoulder of the trocar does not properly cover the end of the cannula. If owing to an emergency the needle cannot be sharpened or the end of the cannula bevelled on a stone, a small incision can be made in the skin after thorough infiltration by novocain. Alternatively the skin may be pinched up and the instrument

* A post-graduate lecture to old students of Charing Cross Hospital.

[1] This is best kept in stock with a little chloroform to prevent the growth of a fungus which otherwise usually appears; the solution can be boiled in a spoon just before use and the chloroform thus got rid of.

pushed into the subcutaneous tissues horizontally to avoid all risk of entering the thoracic cavity suddenly and violently, and then held vertically and gently inserted. If a large instrument like a thoracoscope has to be inserted, it may be an actual advantage to make a preliminary incision down to the intercostal muscles to promote healing by first intention. But for ordinary exploration or aspiration this is crude technique and should be avoided. It frightens the patient and it leaves a scar. If an interlobar empyema or a malignant growth is suspected, it may be necessary to push the exploring needle three or four inches into the chest; this should not be in the least degree painful.

The occasions for puncture of the chest are as follows:

Exploratory Puncture.

Exploratory puncture is indicated: (1) if fluid is suspected and it is necessary to know its nature; (2) to distinguish between fluid, new growth, thickened pleura, or solid lung; and (3) sometimes if there is doubt whether a pneumothorax exists.

The signs of fluid are, as a rule, dullness, weak or absent breath sounds or bronchial breathing, an absence of adventitious sounds, weak or absent vocal resonance or whispering pectoriloquy. There are two popular fallacies. I am often told: (*a*) that fluid cannot be present because there is bronchial breathing; in the absence of adventitious sounds this is a sign—and a common sign—of fluid; (*b*) that pus cannot be present because there is no rise of temperature, but I have seen a streptococcal empyema of seven pints with no fever, and many other cases of non-febrile empyema. Even if the signs are not those of fluid, but pus is strongly suspected from the symptoms and the history, exploratory puncture should be performed. Carried out gently and properly I have never seen it do any harm.

Tapping a Serous Pleural Effusion.

A serous effusion should be explored: (1) if it is causing distress; (2) if it appears to be causing high fever; (3) if it does not begin to be absorbed after three weeks' treatment; (4) as a diagnostic measure to facilitate X ray examination, when replacement—a method to be described—will be necessary.

If these indications are not present no useful purpose is served by interference. Pleural effusion right up to the clavicle will often disappear entirely in three or four weeks.

There are several ways of removing serous fluid from the chest:—

1. The simplest method is *ordinary syphonage.* All that is needed is a needle, rubber tubing, and a bottle containing some carbolic solution. The needle is put into the chest with the tube attached, and the distal end is placed under the fluid in the bottle, which stands on a chair by the bedside. A cough will usually drive fluid out of the tube and syphonage will take place.

2. *Negative pressure aspirators.—Potain's aspirator* I find clumsy and unsatisfactory. I use a *Dieulafoy's aspirator* if simple syphonage is not possible. It is portable, can be used for replacement, and the tube is less likely to be blocked by lymph or, if blocked, can be cleared by reversing the action. Care must be taken not to exert too much force, as too high a negative pressure may be created in the pleural cavity, with unpleasant, alarming, dangerous, and even fatal results. These can all be prevented by the replacement method. I have an attachment so that the exploring syringe may be fixed straight on to the Dieulafoy needles or cannula. Sometimes at the psychological moment the washer fails to function. For this reason an all-metal apparatus may be preferable, but it prevents the operator from seeing what he is doing, and the best method is to use the ordinary apparatus and test it beforehand.

3. *Replacement by air or oxygen.*—The fluid, instead of being drawn off by the force of aspiration or of gravity, is replaced by sterile air or oxygen, so that a pneumothorax is left; this soon becomes absorbed, exerting steady and gentle traction on the lung, causing it to expand. This method avoids the dangers of aspiration: cough, distress, pain, hæmorrhage, pulmonary œdema, and sudden death, and all the fluid can be withdrawn at one operation. Its practical value may be illustrated by the following case:—

A youth of 19 contracted influenza. In a few days severe broncho-pneumonia developed, and within nine days typical signs of a large pleural effusion were manifest and he was desperately ill. I found the whole of the left side absolutely dull, and the heart considerably displaced to the right. Exploratory puncture revealed a reddish-brown purulent fluid. I aspirated with a Woulfe's bottle and a Higginson's syringe. About a pint of pus had been removed by gentle aspiration when the patient suddenly cried out in acute distress and became intensely cyanosed. I at once stopped aspiration, disconnected the tube from the bottle, and placed some cotton-wool lightly over its lumen. Air was sucked into the pleural cavity through the tube and the symptoms and the cyanosis were immediately relieved. I then aspirated another pint of fluid, allowing a little air to enter the pleural cavity from time to time in the manner described. The immediate relief of symptoms by the admission of air was dramatic. The pain of a high negative pressure in the pleural cavity is not sufficiently emphasised in medical literature. Occasionally, though fluid can be obtained on exploration, more can be withdrawn when the aspirating needle is inserted. This may be because the puncture has been made too low and the diaphragm gets in the way (the most likely reason), or that an adhesion has been encountered, or that the fluid is under great negative pressure. It is, therefore, important not to go too low. The best places are just below the angle of the scapula or in the axillary line in the fifth space, the patient being turned slightly towards the unaffected side. If there is a high negative pressure this will almost certainly be felt when using the exploring syringe and replacement will be necessary.

Aspiration of an Empyema.

In the ordinary slowly-evolving pneumococcal empyema the usual method of resection with drainage at the proper time, not too early and not too late, still remains the best. There are, however, two types of empyema that must never be treated by an open operation: (1) the tuberculous empyema, and (2) the acute streptococcal empyema, or a fulminating staphylococcal or pneumococcal empyema. In the first case operation will produce a doubly infected empyema and a persistent sinus. In the second case the patient will die. Aspiration, therefore, is the right treatment until it is safe to perform an open operation. A true tuberculous empyema (by this I mean an empyema the pus of which is sterile on culture but contains many tubercle bacilli, and not an empyema secondary to a spontaneous pneumothorax which has become infected by other organisms) should either be left alone or, if it is causing symptoms, replaced by air or oxygen; it may be necessary to replace it by 5 per cent. gomenolised olive oil or paraffin oil.

In dealing with an acute streptococcal (sometimes staphylococcal or fulminating pneumococcal) empyema appearing rapidly and early in the course of the illness, open operation must be avoided. The mediastinum has had no opportunity to become fixed, pressure changes on the contralateral side and mediastinal fluttering will occur, and the result will almost certainly prove fatal.

Aspiration must be employed. Occasionally negative pressure drainage may be used instead. The wound must, however, be truly air-tight. The following case may serve as an example:—

A nurse on duty in the wards complained for two days of malaise. On the third day she was obviously ill and was found to have a high temperature. Within two days of this, the left side of her chest was filled with fluid and she was desperately ill. Exploration revealed a thin pus which contained streptococci. By means of a syringe I aspirated as much as I could without causing any distress. For a week and more we aspirated daily and the patient began to improve a little. By this time the pus had become much thicker and it was deemed safe a few days later to make an intercostal incision and insert a small tube. She improved progressively, but the pleura had become thickened and the pleural space would not close, in spite of irrigation by Dakin's solution. Mr. Norman Lake therefore resected and decorticated the lung. This now expanded and a perfect recovery resulted. If early open operation had been performed in this case the patient, in my opinion, would inevitably have died.

Pneumothorax and Thoracoscopy.

Aspiration may also be needed for certain cases of high positive-pressure spontaneous pneumothorax, and in certain cases of hæmothorax after wounds or accident.

Artificial pneumothorax is becoming increasingly more common. The technique of inserting the needle for refills is the same as for exploration. The technique of induction, however, is more difficult and complicated, and in giving refills it is necessary to have a knowledge of the intrapleural pressures and their variations under different conditions.

By thoracoscopy is meant the passing of an optical instrument into the pleural cavity where a pneumothorax has previously been produced. It is done for diagnosis, to determine the nature of extra-pulmonary tumours and their relation of surrounding structures, and to determine the size, position, and nature of adhesions, with a view to their severence by the cautery if they are rendering an artificial pneumothorax inefficient by holding out the lung in a part where collapse is essential. With suitable local anæsthesia the passage of the instrument is painless. All possible care must be taken at the time and afterwards to limit the amount of surgical emphysema, which is apt to occur after prolonged thoracoscopy. With a short thoracoscopy there is no disturbance.

THE INFLUENCE OF
LIVER TREATMENT ON THE MORTALITY FROM PERNICIOUS ANÆMIA.

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THE introduction of the treatment of pernicious anæmia by the Minot-Murphy method and its modifications has been followed in this country, as elsewhere, by its rapid extension, and the success attendant on this method of therapy has been confirmed in numerous reports since that time. All authorities seem to recognise in it a distinct advance in the therapeutic methods extended to patients suffering from this disease. The position now is thus comparable to that following the introduction in 1923 of insulin in the treatment of diabetes; and a review of the mortality from pernicious anæmia should possess a more than usual clinical interest.

Accurate study of the effects on mortality produced by a relatively sudden change in any factor likely to influence the course of mortality requires a clear picture of at least the more important features presented by the death-rates before that date. The object of the present note is, therefore, to resume briefly the events leading up to the introduction of this new treatment, to compare these with subsequent happenings, and to assess, if possible, in a quantitative manner the amount of improvement which has been effected by the change in therapeutic methods.

Review of the Data.

Age and Sex Distribution.—To give a general idea of the distribution of mortality by age and sex, the average death-rates by sex at certain broad age-groups for the six years 1921–26 are given in Table I. From this it will be noted that males experience at all ages a mortality about 20 per cent. lower than do females, but the difference is by no means constant at individual ages. In general the relative difference between the sexes diminishes with increasing age. Thus, at ages under 45 years the difference is about 40 per cent.; at 45 to 55, 18 per cent.; 55 to 65, 11 per cent.; and at ages over 65 years, only 2 or 3 per cent. Mortality in both sexes, however, shows an uninterrupted increase from the earliest ages up to the decennium 65 to 75, but in the final age-group again shows a slight decrease.

* Working for the Medical Research Council.

The *Secular Trend* of the death-rates from pernicious anæmia can be traced with accuracy only subsequent to 1920, the year in which it was first tabulated separately in the Annual Reports of the Registrar-General. Before that date deaths attributed to this disease were included in the group "Anæmia, chlorosis" (No. 58 of the international list), but, as T. H. C. Stevenson[1] has pointed out, these deaths contribute almost 90 per cent. to the total of this combined group, and the history of this cause of death prior to 1920 may, therefore, be inferred with some degree of accuracy from the records for that title. The chief interest at the moment, however, centres on the more recent events of the present

TABLE I.—*Mortality-rates in England and Wales by Age and Sex (1921–26).*

Age.	M.	F.
0—	4·9	7·8
25—	14·3	29·6
35—	39·7	69·4
45—	106·9	129·9
55—	226·1	252·8
65—	331·1	336·9
75+	196·4	201·8
All ages	57·4	74·3

TABLE II.—*Trend of Mortality (Standardised Death-rates).*

Year.	M.	F.
1921	56·8	72·1
1922	62·0	71·9
1923	54·9	65·1
1924	55·8	69·5
1925	57·4	69·4
1926	58·4	74·7
1927	56·1	68·7
1928	37·2	48·0

M. = males; F. = females.

decennium, and it is indeed fortunate that we possess reliable records, for an appreciable length of time, of the mortality attributed to this condition.

In Table II. are collected the standardised death-rates, separately for males and females, in each of the years from 1921 until 1928 (the latest records recently made available). These standardised rates of mortality, calculated by the direct method and using as "standard" the population at ages of the whole of England and Wales at the date of the 1921 Census, make allowance for the effect of the changes in the age constitution of the population which have taken place within the period under review. In both sexes, up to the year 1926, very little evidence of departure from a horizontal trend is noticeable. Between 1923 and 1926 there is an apparent slight tendency to increase both in the male and female death-rates, but these fluctuations are of no significance. That this is so has been verified in the following manner.

The average death-rates at ages for the whole period 1921–26 have been applied to the estimated age distribution of the population in each year of that period, and the expected were then compared with the actual deaths. The standard deviation of the difference between the actual number of deaths and the number which would have been recorded if the mortality at each age in any given year had been exactly the same as the average rates at ages for the whole period was taken as the square root of the expected number. In no year of the series up to 1926 do the deviations, either of the total deaths at all ages or of deaths at individual ages, exceed twice this figure.

It may, therefore, confidently be assumed that, in reference both to the total number and the age distribution of deaths from this disease, no significant change in either sex has taken place in the six, what may be termed "normal," years preceding the introduction of the new therapeutic methods.

Local Variations in Mortality.—In England and Wales the distribution of mortality from this cause is not given in the same detail as other, numerically more important, causes of death. For the available administrative subdivisions of the country the age-standardised rates of mortality, based on the experience of the years 1921–26 inclusive, for each sex, are given in Table III. The only point of interest here is the extremely low rate recorded in London. In the remaining three aggregates there is little difference either one from another or from the average for the country as a whole. The striking superiority of London is shared equally by the two sexes.

[1] Registrar-General's Statistical Review of England and Wales, 1926.

Seasonal Variations.—Stevenson [2] has already pointed out that there is a definite tendency for mortality from this cause to vary with season. The most significant feature of the seasonal distribution is the relatively low death-rate in both sexes in the third quarter and the exceptionally high rate in the winter months. In Table IV. are shown the proportions of the total deaths, uncorrected for differences in the number of days, in each quarter of the year for the period 1921–26. The autumn defect and

TABLE III.—*Standardised Rates of Mortality in Administrative Divisions (1921–26).*

—	M.	F.
London	34·4	41·8
County boroughs ..	59·4	72·7
Urban districts ..	64·3	75·8
Rural districts ..	57·5	75·8
England and Wales	57·4	74·3

TABLE IV.—*Seasonal Distribution of Mortality (1921–26).*

—	M.	F.
First quarter	24·83	25·98
Second ,,	25·07	24·56
Third ,,	22·70	23·40
Fourth ,,	27·40	26·06
—	—	—

winter excess are quite evident. (More detailed information on this aspect may be obtained in the successive Registrar-General's Annual Reports, in which are tabulated the number of deaths registered in each month of the year.)

Changes in Mortality in 1927 and 1928.

Table V. shows the male and female rates of mortality at separate and at all ages in these two years. Reference to this table and to the data previously collected in Tables I. and II. brings out the following features of interest. Compared with the average experience of 1921–26, there has been in 1927 a reduction in mortality, both in males and females, in some of the age-groups, but the total improvement, obviously small, is counterbalanced by increased mortality in the remaining periods of life. In the succeeding year, 1928, diminished mortality is a

TABLE V.—*Rates of Mortality by Age and Sex in 1927 and 1928.*

Age.	Males.		Females.	
	1927.	1928.	1927.	1928.
0—	4·1	4·9	7·0	6·3
25—	12·7	12·1	25·8	15·6
35—	32·1	16·7	60·1	38·0
45—	83·0	53·4	132·1	71·9
55—	236·3	126·0	242·0	177·8
65—	369·7	269·2	353·4	280·5
75+	230·2	187·4	224·2	186·9
All ages standardised	56·1	37·2	68·7	48·0

feature of every age-group, with the possible exception of the numerically unimportant period 0–25 years.

The statistical significance to be attached to these differences has been tested in a manner similar to that previously employed. The average death-rates at ages for 1921–26 are applied to the estimated population at these ages in 1927 and 1928, and thus are obtained at each age the expected number of deaths. The difference between the actual (A) and the expected (E) deaths compared with the standard deviation of the difference ($\sqrt{E}$) provides us with the required measure of reliability. If the ratio $(A \sim E)/\sqrt{E}$ does not exceed the value 2·0, one is not justified in considering the difference a real one—it might reasonably be looked upon as a random fluctuation. In the year 1927 (the figures have not been tabulated) the actually recorded deaths are fewer, though insignificantly so, than the numbers we should have expected on the basis of the 1921–26 experience, and at individual age periods, also, any tendencies towards improvement, with the one exception—namely, in males aged 45 to 55 years—might well be attributed to chance. The experience of this year, therefore, does not seem to justify any inference as to the effects of treatment on mortality. For the more interesting year, 1928, the comparison between fact and expectation is effected in Table VI. In this year, if the death-rates prevailing in 1921–26 had continued, the number of deaths which would have occurred exceed those actually recorded by as much as 55·3 per cent. in males and 45·4 per cent. in females. At individual ages, moreover, there are only four instances—namely, at ages 0–25 and 25–35 in males, and 0–25 and 75 and over in females—in which the divergence of actual from expected does not exceed the required standard of significance. It is quite certain, then, that in 1928 there was a significant reduction in the number of deaths from this disease in both sexes, although the

TABLE VI.—*Comparison of Actual and Expected Deaths in 1928.*

Age.	Males.		Females.	
	Actual.	Expected.	Actual.	Expected.
0—	42	41·7	53	65·9
25—	34	40·3	51	96·9
35—	41	97·6	111	202·9
45—	122	244·3	186	335·9
55—	211	378·5	330	469·1
65—	233	286·6	297	356·7
75+	56	58·7	87	93·9
Total	739	1147·7	1115	1621·3

relative amount of improvement is not constant at different ages. The greatest amelioration in males is at ages between 35 and 65 years and in females at 25 to 55 years, where the recorded deaths form only about half of what would have been recorded had the 1921–26 rates of mortality prevailed. At other ages the improvement is not nearly so great, the recorded in proportion to expected deaths being 84 per cent. in males over 65 years, and 78 per cent. in females over 55 years.

It seems reasonably certain, therefore, that, although the returns of 1927 do not provide us with much evidence of reaction of mortality to the institution of the new methods of treatment, there is ample evidence in the latest returns of correlation between these two factors.

We may note further, without actually recording the tabular matter, that the main subdivisions of the country, treated in a similar manner, provide exactly similar results—namely, no substantial reduction in 1927 but great improvement in the succeeding year. There is, too, a suggestion that the improvement has been greatest in London, somewhat less in county boroughs, and still less in the smaller urban districts. Rural districts show the same rate of decline as do county boroughs. These remarks apply equally to both males and females.

Expected and Actual Deaths by Season.

This other important feature must be mentioned. Since, as has been shown, the mortality from this cause exhibits definite relation to season, it was considered advisable to compare the records of the two years 1927–28 in somewhat greater detail. The expected numbers of deaths in males and females in these two years were distributed to the four quarters of each year in the same proportions as had already been found for 1921–26, and these were then compared with the seasonal experience which was actually recorded in these two years. It will be seen from the data compiled in Table VII. that in males the actual deaths exceeded the expected in the first and third quarters of 1927, that in the second quarter these were practically identical (the slight difference is statistically quite insignificant), whereas in the fourth quarter the actual deaths amounted only to 79 per cent. of what would have been recorded had conditions remained as in 1921–26. Compared with the standard error involved, this is a numerically important deficit. In each of the four seasons of 1928 we find the actual deaths well in defect of the expected, and, what is perhaps of greater significance,

[2] Ibid., 1925.

the relative difference gradually increases throughout the year. Thus, in the first quarter the actual deaths formed only 78 per cent. of the expected; in the second quarter, 65 per cent.; in the third, 64 per cent.; while in the last quarter for which records are available the ratio was still further reduced to 51 per cent. of the numbers anticipated. This steadily increasing divergence between fact and expectation constitutes probably a point of fundamental importance in the records of mortality statistics.

In females a somewhat similar encouraging trend is manifest, except that the records of the year 1927 do not at all suggest the intervention of any agency

TABLE VII.—*Expected Deaths distributed according to Season and Compared with Actual Deaths.*

—	Males.		Females.	
	Actual.	Expected.	Actual.	Expected.
1927.				
January ..	307	279·5	434	412·7
April	278	282·2	348	390·2
July	273	255·5	361	371·8
October ..	244	308·4	410	414·0
1928.				
January ..	223	285·0	312	421·2
April	187	287·7	278	398·2
July	168	260·5	250	379·4
October ..	161	314·5	275	422·5

favourable to a declining death-rate. Thus, although there is a statistically significant discrepancy in the second quarter of this year, no such difference is apparent in the remainder of the year, in which actual and theoretical deaths almost exactly correspond. In the succeeding year, however, no doubt can possibly exist as to the significance of the general tendency. In the first quarter the deaths which occurred formed only 74 per cent. of what we should have predicted; in the second, 70 per cent.; in the third, 66 per cent.; and, finally, in the fourth, 65 per cent.

Such a tendency is exactly what would be expected from the extensive and extending use of a beneficial therapeutic agent.

Summary and Conclusions.

The inferences suggested by the foregoing analysis of the mortality returns of pernicious anæmia in England and Wales may be resumed briefly as follows. For the six years immediately preceding the introduction of the new dietetic treatment of this disease the rates of mortality in both sexes pursued a course which was practically horizontal, the age and sex distributions of the deaths at the same time showing no important changes. In 1927 there was a slight tendency towards improvement apparent in males and specially affecting the returns of the last three months of the year; but, taken in conjunction with the findings for the mortality among females, it may fairly be said that the evidence of significant change which can be derived from these statistics is not at all convincing. In the succeeding year a very definite decline in mortality took place—a reduction of some 915 deaths over expectancy, affecting both sexes, limited chiefly to young adult and middle ages, beginning early in the year and consistently increasing towards its close; greater in London than elsewhere and occurring in the absence, so far as we are at present aware, of change in any factor liable to affect the course of mortality other than the method of treatment. The general inference seems obvious. That there has been a definite lag between the institution of the new treatment and the response of the death-rate is not at all surprising. The whole of the evidence is consistent with the view of causal association between the two factors and, judging from the course of mortality in the comparatively short period since the institution of specific therapy, it would seem safe to predict that extension of the treatment to a still larger proportion of patients suffering from the disease will be reflected in further decline in the mortality attributed to this cause.

A CASE OF

HEREDITARY CONTRACTURE OF THE LITTLE FINGERS (KAMPTODACTYLY).

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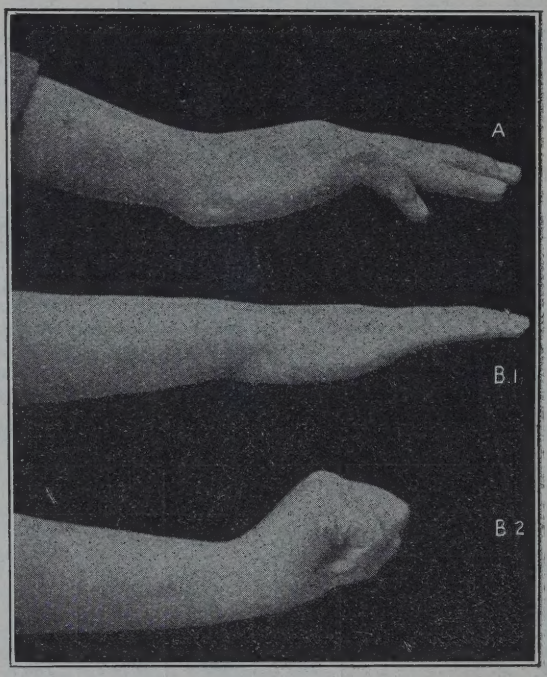
THE diagnosis of this condition presents no difficulty, even when the patient happens to be an adult. There is always a history of the contracture having been present ever since infancy, undergoing very little change if left untreated; and in some cases its congenital character is emphasised by the presence of other congenital abnormalities, such as club-foot, hare-lip, hammer-toe, &c. As a rule both hands are affected more or less equally. Females are said to be more liable to the condition than are males. The type of contracture is quite characteristic; the metacarpophalangeal joint is hyperextended, the proximal interphalangeal joint is flexed (usually to about a right angle), and the distal joint is extended or tends to be extended. In many cases, but not in all, the contracted proximal interphalangeal joint is stiff; no movement can be obtained at it, actively or passively; but the patients learn to accommodate themselves to this, having never known anything different, and it seems to handicap them little, if at all; I know, for instance, of a brilliant surgeon whose dexterity as an operator is certainly not impaired by it. The stiffness of the joint seems to be entirely due to changes in the soft parts; radiograms never show any abnormality. The palmar fascia is never affected; this is one of the most important points of distinction, in adult cases, from Dupuytren's contracture. The principal contracture seems to be, primarily, in the capsule of the joint on its flexor aspect; in this respect there is a close resemblance to congenital contracture of the knees, whilst the stiffness of the joints is

FIG. 1.



The hand in a case of kamptodactyly before treatment (A) and after treatment (B).

reminiscent of many cases of congenital contracture of the shoulder-joints, though the latter class sometimes show radiographic abnormalities.

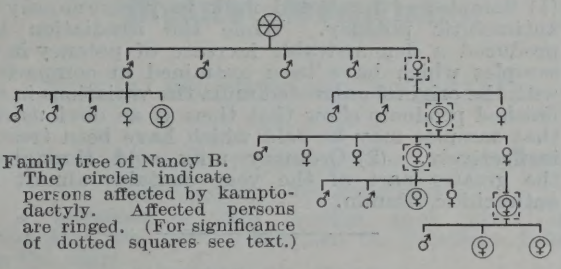
As in all congenital deformities, there is a marked tendency to relapse after treatment by stretching with splints. But, in the early stages of the condition, there is no difficulty in straightening the fingers by means of simple palmar splints.

In the present case the patient was a female child, 14 months old, and a strip of aluminium, ¼ inch wide, bent to fit the little finger and palm, was affixed by means of a continuous spiral of zinc oxide strapping, a tiny pad of white felt being placed on top of the projecting joint and beneath the tip of the middle phalanx. By gradually straightening the splint as the contracture yielded, the finger was straightened in the course of six weeks. The splint is now being applied intermittently to prevent any recurrence of the deformity, and it is hoped, by keeping the child under observation, to ensure a permanent cure.

The photographs (Fig. 1) show another case, that of a girl aged 12, in whom the same method brought about complete correction in four months. In both cases flexion and extension of the little fingers are full, painless, and normally powerful.

The mother of the younger child, Nancy B. (who was under my care as an out-patient at Croydon General Hospital), took a particularly intelligent interest in the condition, and compiled a family tree (Fig. 2), showing which members of the family

FIG. 2.



Family tree of Nancy B. The circles indicate persons affected by kamptodactyly. Affected persons are ringed. (For significance of dotted squares see text.)

had been affected, out of the total number, in six generations; it is believed that the condition was present in earlier generations, but no exact information is available about these. The tree, as presented, is probably pretty accurate, since the mother went to much trouble to obtain corroborative evidence from various relatives. It is interesting to note that, in each generation, the firstborn child (shown on the right of the tree) escaped. It may be noted that there was no consanguinity between any of the fathers and mothers, and that there were no cases of similarly affected persons marrying.

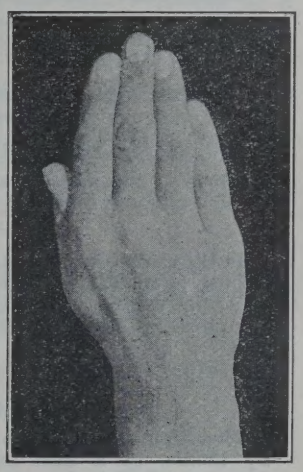
Observations by Prof. Wells.

The family tree was submitted to Prof. G. P. Wells, of the Department of Zoology, University College, London, who examined it with Prof. Watson and Mr. Palmer, and kindly made the following commentary upon it.

"It is not by any means easy to get a simple story out of it, but we would like to make the following suggestions. Assuming the condition to be due to a single Mendelian gene, it must be recessive, because it runs through the first generation without showing itself. If this be true, the character could never appear again unless one of the people in whom it was carried happened to marry another who also carried the gene. Now this must have happened no fewer than five times, all the people indicated by dotted squares having married other heterozygotes—which is at first sight a very improbable proposition! It would very greatly increase the value of the data if information could be got as to the other families which married into this one. In the table as it stands only one parent of each generation is accounted for, while in considering the results of any pairing one naturally wants information about both. Thus it would be interesting to know whether the partners of all the people ringed with dotted squares came from unrelated families without any trace of a similar deformity, or whether there is any evidence of inbreeding (such as cousin marriages) in the pedigree. The latter event would, of course, diminish the improbability of the ringed people having married other heterozygotes.

"In the matter of the firstborn not being affected, this is, in our opinion, a chance result. It is hard to see how such a selective effect could come about, and (as the number of firstborn in the table is only 6 out of 26 individuals) the odds against such a distribution are not very great. What is rather more remarkable is that only females are affected, although apparently the gene can be transmitted through males. But here again it is difficult to judge whether the number of individuals recorded is sufficient to warrant the inclusion of extra factors (such as a sex-linked modifying gene) to explain the restriction."

FIG. 3.



The hand in a case of klinodactyly.

As far as could be ascertained, there was in fact no history of any similar affection in any of the persons marrying into the affected family, and there was certainly no intermarrying.

Prof. Crew's Notes.

Upon Prof. Wells's suggestion, the pedigree was also sent to Prof. F. A. E. Crew, of the Animal Breeding Research Department of the University of Edinburgh, who very kindly sent me the following notes upon the case, and references to the literature:—

"The condition which you describe has been recorded by several people, but always rather imperfectly. Your case is an instance of a sex-limited or sex-controlled dominant which, for reasons unknown, is not always expressed. I am assuming, of course, that the non-appearance of the condition in males is significant, and that it appears in females because of their different physiology (sex controlled). It would be interesting to make a very complete examination of the grandmother of the last generation in your family tree; it seems somewhat strange that she did not exhibit some degree of the condition. I am sorry that one cannot give a simpler explanation, but that seems always to be so in the case of the human. The expression of a hereditary character seems to be conditioned by many forces, of which one as yet knows nothing.

"So-called 'klinodactyly' (see Fig. 3) is a condition where the end joint of the little finger (and frequently the ring finger) is inclined sideways towards the middle finger, and is stiff. Mode of inheritance is dominant.[1] This bending to the side occurs very often as a consequence of brachyphalangy of single fingers. So-called 'kamptodactyly' is a condition where the little finger (and frequently the ring finger) is bent forward and is stiff. Goldflam[2] reports on a family where, in three generations, 26 persons were affected.

"Many hereditary disturbances of muscular function and pathological muscular structure are known. No case of dominancy has been observed. Most cases are to be classed as muscular dystrophies. It is not infrequent for sex-linked recessive 'Anlagen' of muscular dystrophy to appear. Lenz[3]

[1] Wegelin, K: Berl. klin. Woch., 1917, p. 283.
[2] Goldflam, S.: Münch. med. Woch., 1906.
[3] Menschliche Erblichkeitslehre, by Baur, E., Fischer, E., and Lenz, F. Munich, 1927, p. 238. Erbliche Nervenleiden, by Lenz.

does not refer to any case which can be directly compared with that of Nancy B.'s family. None of the cases discussed by Lenz, and which might otherwise be compared with B., is clearly sex-linked. He only refers to part of the literature on the subject."

Clinical and Laboratory Notes.

THE VALUE OF IRRADIATED MILK

COMPARED WITH COD-LIVER OIL AS A SOURCE OF VITAMIN D.

BY KATHARINE H. COWARD, D.Sc.

(From the Pharmacological Laboratories, Pharmaceutical Society of Great Britain.)

THE interest which has recently been displayed in the use of irradiated milk for feeding infants makes it of some value to publish the observations on the amounts of the antirachitic vitamin present in different samples which have been examined in this laboratory in the last two or three years.

Sources of Milk Examined.

The first sample of milk examined was irradiated by means of a mercury-vapour lamp hung at a distance of 12 inches from the cooler over which the milk was flowing. A calculation showed that the milk was exposed to the rays for about 30 seconds. This, so far as we know, is the longest period of irradiation of any sample examined in these laboratories. The milk was submitted to a test for vitamin A and its contents of this factor appeared to be no less than that of a sample of the same milk which had not been irradiated. Its vitamin D content was estimated in terms of the unit adopted by this Society, the unit being defined as the amount of antirachitic activity contained in 0·0001 mg. of the Society's standard preparation of irradiated ergosterol. It was found to contain about 0·2 unit antirachitic activity per gramme. The untreated milk had about one-fifth of this potency.

Other samples obtained from the same source and irradiated under different conditions were found to contain 0·5, 1·0, 1·0, and 2·0 units respectively of antirachitic activity per gramme, while the corresponding samples of untreated milk contained negligible amounts or at the most 0·1 unit per gramme. A sample of skimmed milk was found to contain about half the vitamin activity of the whole milk from which it was obtained, when both had been irradiated under the same conditions.

The low vitamin D content of the untreated samples of milk is especially disturbing in view of the fact that they were taken during all seasons of the year—that is, they were examined in August and November, 1928, and February and June, 1929.

Other samples obtained from different sources and of which we have no details of the process of irradiation were found to contain 0·1 and 0·2 unit respectively of antirachitic activity per gramme.

Method of Comparison.

The fact that all our estimations of vitamin D are made by comparison with a standard preparation makes it possible to compare the antirachitic potency of any two substances which have been examined, and in this way the irradiated milk may be compared with cod-liver oil.

An average good sample of oil contains about 100 units per gramme, though some samples contain only half this quantity, and others nearly twice as much. The richest sample of irradiated milk examined contained 2·0 units per gramme, while the poorest contained 0·1 unit per gramme. Hence, weight for weight, a good sample of oil contains from 50 to 1000 times as much antirachitic vitamin as current samples of irradiated milk.

A different comparison, however, may be made in terms of the amounts of milk and oil ordinarily consumed. One pint of irradiated milk containing 0·1 unit per gramme (the weakest examined) would contain 60 units of vitamin D, which is contained in 0·6 g., or 30 drops of cod-liver oil. Hence a child of seven months would require to have 10 drops of a good average oil three times a day in order to have the same quantity of antirachitic vitamin as it would obtain in one pint of this weakest sample of irradiated milk. The same amount would be present in 1 oz. of milk containing 2·0 units per gramme. Our observations, however, lead us to think that the potency most frequently available to the public at present is 0·2 unit per gramme, and for this milk the figures in the table give the cod-liver oil equivalents.

Daily dose of cod-liver oil.	Number of units present.	Corresponding amount of irradiated milk with potency 0·2 unit per gramme.
30 drops (0·6 g.)	60	½ pint (300 g.)
½ teaspoonful (1·6 g.)	160	1½ pints (800 g.)
2 teaspoonsful (6·5 g.)	650	5½ pints (3250 g.)

Conclusion.

In conclusion, two points may be emphasised: (1) Samples of irradiated milk vary enormously in antirachitic potency. While the irradiation has produced a demonstrable increase of potency in all samples which have been examined in comparison with the original untreated milk, the variations in the finished products show that there is an obvious risk that samples may be sold which have been treated ineffectively. (2) Ordinary milk sold throughout the greater part of the year contains almost no antirachitic vitamin.

A CASE OF EMPYEMA

WITH PERFORATION OF BRONCHUS AND PARTIAL PNEUMOTHORAX.

BY GEORGE JESSEL, M.D. OXF., D.P.H.,

CONSULTANT TUBERCULOSIS OFFICER, LANCASHIRE COUNTY COUNCIL, AND MEDICAL SUPERINTENDENT, PEEL HALL PULMONARY HOSPITAL.

ALTHOUGH perforation of a bronchus is briefly mentioned in most text-books as occurring occasionally in cases of empyema, details of few cases appear to have been recorded. Biach[1] analysed 918 cases of pneumothorax in the hospitals of Vienna and found 45, or 4·9 per cent., due to empyema. Johnson[2] reported a series of ten cases occurring in infants during a ten-year period, and Rodgers[3] has reported a case aged 8 years. The following case is of special interest, because it was possible to obtain a skiagram showing the partial pneumothorax.

A youth, aged 17, who was said to have enjoyed good health until early in February, 1929, was taken suddenly ill with what was thought at first to be a chill and influenza. Subsequently pneumonia was diagnosed and he was in bed for several weeks. As his condition did not clear up, his doctor referred him to the local tuberculosis officer, who recommended his admission to hospital for further investigation. He was accordingly admitted to the Peel Hall Hospital on August 7th.

On admission the outstanding symptom was profuse purulent expectoration. He was very thin, weighing only 6 st. 2 lb. His temperature in the evening was 99° F. and his pulse-rate 108. On examination the right lung was dull on percussion and the breath sounds were weak. There were many crepitations in front and tactile vocal fremitus behind. Neither succussion splash nor coin sound was

[1] Wien. Med. Woch., 1880, xxx., 6.
[2] Amer. Jour. Dis. Child., 1927, xxxiii., 740.
[3] Arch. of Ped., 1927.

heard. Microscopic examination of the sputum showed no tubercle bacilli but there were many cocci arranged in chains, together with an enormous number of pus cells. A skiagram taken shortly after admission showed a dense homogeneous opaque shadow with horizontal upper margin at the level of the fourth rib in front, the shadow merging homogeneously with the cardiac and diaphragm shadows. Above and to the outer side was a clear pocket between the third and fourth ribs, bounded externally by the chest wall and with its inner margin concave outwards midway between the chest wall and mediastinum. Above and to the inner side of this clear area was a shadow of moderate and uneven density, though much less dense than the basal shadow, extending to the apex of the lung. The heart was not apparently displaced to the left. A provisional diagnosis was made of partial pneumothorax due to perforation of bronchus in a case of empyema; subsequent investigation proved this to be correct. A series of leucocyte counts gave an average of 17,500, and a detailed examination of the purulent expectoration was made by Dr. A. F. C. Davey, of the Public Health Laboratory, Manchester, who reported as follows: "Microscopic examination shows pus cells and numerous organisms, chiefly streptococci, some of which occur in long chains. Blood-agar plates inoculated with the material produce a profuse growth, chiefly of hæmolytic streptococci. Two animals were inoculated on Sept. 12th and both died on the following day. Films from the heart blood showed streptococci and on cultivation hæmolytic streptococci were again obtained."

The subsequent history is interesting. The sputum, which on admission had been very profuse, gradually became less and the lad's condition improved. On Sept. 5th he complained of headache and pain in the right chest. The following day his temperature rose to 100·6° and he coughed up half a pint of very thick purulent material. He felt better after this and his temperature became normal. The physical signs in the right lung about this time were: defective movement; tactile vocal fremitus present all over; dullness on percussion, especially over the lower lobe; some breath sounds with a few crepitations over the upper lobe; no breath sounds over the lower lobe. A second skiagram now showed no evidence of the air-pocket, the whole of the right side of the chest appearing as a dense opacity. He was discharged from hospital on Sept. 26th, his condition having greatly improved since admission.

The accidental perforation of a bronchus was fortunate for the patient in that it provided an exit for the pus in a case of empyema hitherto unrecognised. Considering the marked improvement in his condition after the evacuation of the pus, resection of rib was deemed unnecessary, as the prognosis in such cases is said to be fairly good.

I have to thank my colleagues, Dr. C. W. Laird and Dr. G. B. Charnock, for providing me with the opportunity of investigating this case, and the Central Tuberculosis Officer (Dr. Lissant Cox) for permission to publish it.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

THE TRAINING OF MIDWIVES.

A MEETING of this Section took place on Nov. 15th, Dr. ARTHUR E. GILES, the President, being in the chair.

Dr. HERBERT SPENCER, in introducing a discussion on the Report of the Departmental Committee on the Training of Midwives,[1] pointed out that only one of the 12 members of the Committee was an obstetrician. That one member, Dr. J. S. Fairbairn, and Mrs. Richmond had dissociated themselves from those recommendations which involved the splitting up of the functions hitherto performed by the Central Midwives Board. Dr. Fairbairn and Mrs. Richmond urged that no such momentous changes should be made without full and open discussion not only by the midwives, teachers, teaching schools, and other interested parties in England, but also by the corresponding Boards in Scotland and both Divisions of Ireland, with whom there had hitherto been complete reciprocity. With most of the rest of the report he assumed that members of the Section would agree, especially with the recommendation for preferential treatment of medical students over midwives in the allocation of cases in the medical schools, and with the comment that a large amount of valuable clinical material was used by midwives who did not intend to practise. Parts 1 and 5 of the report dealing with the historical aspect of the subject and with administration were those which most nearly concerned the Section of Obstetrics, and these merited the most earnest consideration. Dr. Spencer said he thought the report of the Departmental Committee might well have pointed out that it was to the persistent efforts of the Obstetrical Society of London that the Midwives Act of 1902 was due. He believed that the Section would agree that the Central Midwives Board had performed its duties well, and that the Section would not think the duties could properly be carried out by a Ministry of Health, whose treatment of the panel doctors was characterised by the Lord Chief Justice of England as pure despotism.

[1] See THE LANCET, Sept. 28th, pp. 669 and 680.

Criticism of Administrative Proposals.

Dr. T. WATTS EDEN said that the report of this Committee contained much with which the Section of Obstetrics and obstetric teachers would find themselves in agreement. It was to the administrative proposals that serious exception was taken. The principle upon which the practice of midwifery had been carried on in this country since the first Midwives Act was passed was, that their affairs were dealt with by a statutory authority appointed for the purpose, into whose hands were placed all matters concerned with the education and training and professional conduct of midwives. Dr. Eden thought this was a very sound principle, from which, however, the Departmental Committee proposed an entire departure. Upon the statutory authority the three classes mostly concerned—obstetric teachers, general practitioners, and medical officers of health—were all represented, so that the affairs of the midwives were in the hands of those who knew something about the matter. He would not say that the constitution of the Central Midwives Board was an ideal one; it might have been more ideally representative of the classes chiefly interested, and it might have been given wider powers, but within the limits imposed upon it the Board did very excellent work. Obstetricians were now asked to consent to depriving this statutory authority of its most important functions, to the removal of responsibility for the training and education of midwives out of their hands. It was proposed this responsibility should be vested in the Ministry of Health, which should have the assistance of something which was called an advisory committee. The experience of himself and his colleagues was that advisory committees of Government departments were not allowed to do very much. When the Ministry of Health was constituted an advisory medical committee was appointed, with Sir Bertrand Dawson (now Lord Dawson) as its chairman, and he believed that body had never been given any serious work to do at all. When medical subjects came up for inquiry the practice of the Ministry was to make its arrangements and appoint its committees of inquiry independently of its own advisory committee; and Dr. Eden expected that if this scheme should go through, the advisory committee on midwifery would meet with much the same fate. Even if it were asked for its opinion at all the Ministry would not necessarily accept the advice given—and the power would be entirely in the hands of the Minister. This matter must also be considered in connexion with the scheme set out in the report of the Departmental Committee for the formation of a national maternity service.

It was contemplated by this Committee that when their scheme was put into operation four-fifths of the confinements of the country would be carried out by midwives who would be paid for their services under the Insurance Act by the local authority, and would consequently be, to a great extent, under the control of the Ministry of Health. The result would be that the practice of midwifery, roughly speaking, would pass under the control of a Government department instead of being, as it was now, in the hands of the profession, guided by the statutory authority. He hoped the Section would agree that such a change could not be carried through without great detriment to the teaching and practice of midwifery.

One of the important duties of the Central Midwives Board was the inspection and approval of the institutions in which midwives were trained. It was true that their power with regard to inspection had been seriously interfered with by the action of the Ministry of Health, because when the poor-law institutions began to train midwives the Ministry of Health said: "You cannot inspect these institutions; they are Government institutions, and we will inspect them ourselves." But the Ministry of Health had no inspectors on its staff capable of inquiring into the efficiency of the methods of instruction given and the suitability of the general system on which the institution was worked. In the resolution which would be submitted to this meeting it would be suggested that the transference of the education and training of midwives and the inspection of their training schools from the ad hoc authority to a Government department was a retrograde step, and that the control and education of midwives and their professional conduct and the bearing of the institutions in which they were trained should still remain in the hands of the authority appointed for the purpose. The Section might consider that that authority should be a larger and more influential body than the Central Midwives Board, that it should be given greater powers, that the majority on that authority should be those who knew, from the practical point of view, what the practice of midwifery was, and that it should be strengthened by the addition of others whose experience of affairs generally and business would be an advantage from the point of view of organisation. But an ad hoc authority there must be if anything like liberty in this matter was to be preserved, either to doctors or to midwives. He did not doubt that, if this scheme should go through, there would be produced before long another scheme by which doctors who practised midwifery under the Insurance Act would also become officials in the Ministry of Health and be paid by the State, so that thus the whole practice of midwifery—except the fractional part concerned with those to whom expense was no object—would pass into the hands of the Ministry, just as the treatment of infectious diseases and tuberculous diseases had done. If such a movement as the present one was likely to succeed, the sooner the profession made its voice heard in opposition the better; and the Section was being asked on this occasion to take the first step—it was hoped it would not be by any means the last step—in making it clear to the Government that such proposals as the Departmental Committee had put forward were totally unacceptable.

The Teacher's Standpoint.

Prof. L. McILROY spoke as a teacher. If 75 per cent. of the midwifery cases of the country were conducted by midwives under the control of the Ministry of Health, who, she asked, would look after the remaining 25 per cent? Would they be looked after by the specialists only, or by the general practitioners? Teachers were not out to train specialists after graduation; they were teaching the future general practitioner, and if practitioners were not going to do midwifery it was time the medical schools set about saving the money spent on their education in obstetrics. She thought it a great pity that up to the present time this Section had been so involved in the maelstrom of scientific work that it had stood aside and had not taken any active part in this controversy. It was a serious matter from the point of view of the teachers and that of practitioners. She wondered what type of person would exercise control in this matter at the Ministry. It might be someone who knew the administrative machinery, but the difficulties of the doctor and midwife could not be understood except by one who was living the life of an obstetrician. If the advice of the general practitioner and of the teacher were shut out, little would be left. The midwife service had been efficient because midwives had had the advantage of the training and the teaching of specialists. She believed that the retention of the Central Midwives Board would make for a better service for the country than would any Government organisation.

A Member of the Departmental Committee.

Dr. J. S. FAIRBAIRN said in an organ of the lay press Lord Hewart had stated: "The conclusion is irresistible that it is manifestly the offspring of a well-thought-out plan the object and effect of which were to clothe the Department with despotic powers over midwives and midwifery generally." The word "Departmental" was the clue to the whole thing. The Department suggested that the Committee was required, the Department determined its composition and its chairman, and those who were to be members of it were not told who their colleagues were to be. On the whole, it was an almost comical body from which to expect a sound opinion on midwives. The administrative side had been in the majority on the Departmental Committee which, unlike a Royal Commission, did not publish its evidence in full. Much of what was tendered was not within the proper meaning of evidence. Only one midwife had sat on the Committee, and she could scarcely be said to represent practising midwives. He had had the feeling throughout the sittings that he was in an antipathetic atmosphere, hostile to the Central Midwives Board, and that the case had been prejudged. The proposal supposed to emanate from the London County Council was apparently the voice of the medical officer of health of that body who had never had to do with midwives. Dr. Fairbairn agreed with Dr. Eden's views about inspection by the Ministry of Health. The Central Midwives Board was not allowed to look inside the poor-law institutions. In some of these hospitals there were, perhaps, 30 confinements in a year, and since it was desired that the nurses should obtain their certificates in midwifery, such nurses were taken from their duties in other wards and were summoned to be present at the confinement in order to be signed up. This was termed training in obstetrics. He felt that these recommendations were the thin end of the wedge, and that sooner or later the medical profession would be involved in similar proposals in so far as the insured women were concerned. He hoped this Section would make its protest.

Discussion.

Dr. W. H. F. OXLEY (Chairman of the Maternal Mortality Committee) said that questions of the kind under discussion profoundly affected maternal mortality, and he felt that his Committee would consider evidence tendered by this Section on the point, as they were anxious to reach conclusions of real value.

Dr. JAMES YOUNG expressed the hope that Dr. Oxley, having heard the discussion, would place the justice of the cause before his Committee. The debate left little room for doubt that the efforts to bring about this change were misdirected. The discussion, and other statements which had been made, should do much to convince those in authority that there was reason for giving the Central Midwives Board a larger representation than ever, and that the responsibility for the management of the affairs of this large professional body should be far more in their own hands. Then there would be nothing to prevent the raising of the standard of midwives.

The PRESIDENT wished it to be clearly understood that the Section was not discussing this matter in any spirit of trade-unionism—i.e., with the idea that the members were seeking to serve the interests of the medical profession—many of whom would be glad to be relieved of the most arduous and worst-paid part of their work. The prevailing feeling of the Section, he was sure, was that if the practice of midwifery were removed from the supervision of medical men, and placed in the hands of a Government department, the well-being of lying-in women and of newborn children would be seriously impaired and imperilled. It was on that broad and important ground, that of the public health, that he personally felt so strongly that the resolution to be submitted should be supported. If carried, the resolution would pass to the Council of the Society, and be forwarded to the proper quarter.

A Resolution.

The resolution, which was carried unanimously, was as follows :—

"The Section of Obstetrics and Gynæcology of the Royal Society of Medicine having discussed the Report of the Departmental Committee on the Training and Employment of Midwives is of opinion :—

"1. That the responsibility for the education and training of midwives, including approval and inspection of training schools, should be retained in the hands of an independent body appointed for the purpose and consisting largely of those who are or who have been engaged in the practice of midwifery.

"2. That the proposal contained in the Report to limit the power of the Central Midwives Board and to give the Minister of Health the sole responsibility of approving and inspecting training institutions and teachers, and of laying down the curriculum of training, would, if adopted, be prejudicial to the teaching and practice of midwifery in this country.

"3. That the Departmental Committee responsible for the recommendations to which we take exception was not a representative body inasmuch it contained only one member out of thirteen who had practical knowledge both of the teaching and practice of midwifery, and this member dissented from the main recommendations of the Committee."

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

A QUARTERLY meeting of this association was held in London on Nov. 6th, with Dr. NATHAN RAW, the President, in the chair. A paper on some experiments with

Suggestion and Association Tests in the Feeble-minded.

was read by Dr. T. SAXTY GOOD, who pointed out that suggestion and suggestibility were two different processes. By suggestion was meant the sum total of (1) stimuli received by sight, hearing, taste, smell, touch (designated external stimuli), and (2) from the autonomic system, which did not enter consciousness in health, except as urges connected with primitive instincts. This could be termed auto-suggestion. The condition of the body called illness was a condition in which the sympathetic system became conscious. Feeble-mindedness was, psychologically, a failure of repression and a falling to a lower type of mind. The results of suggestion and association tests he had performed could be translated in practice as meaning that the dominant parent who had been complacent to the child would cause it to grow up positive to suggestion, whereas a repressive dominant parent or prototype would produce a negative reaction in the child.

Dr. GEOFFREY SHERA read a paper on

Bacillus Acidophilus in Mental Patients.

During 18 months, he said, he had examined the stools of cases admitted to the East Sussex Mental Hospital within a week of their arrival. Among 53 mental cases the reaction of the stool was alkaline in 80 per cent., neutral in 10 per cent., and acid in 10 per cent ; 36 per cent. showed abnormal coliform bacilli, while 69·1 per cent. showed abnormal streptococci. *Bacillus acidophilus* was obtained in pure culture within 72 hours in 9·4 per cent. ; in 41·5 per cent. the appearance of this organism was delayed more than 72 hours. Abnormal aerobes were present in 20·6 per cent. of the cases ; non-hæmolytic staphylococci in 38·9 per cent., and hæmolytic in 7·5 per cent. ; non-hæmolytic streptococci in 43·1 per cent. and hæmolytic in 54·3 per cent. Constipation, said Dr. Shera, was an accompaniment of *B. acidophilus* deficiency, and in general practice this deficiency was usually remedied by the administration of *acidophilus* milk or emulsion. Constipation was the rule in mental patients, and aperients were needed. Eighty-one per cent. of mental patients showed deficiency of *acidophilus*, so that it was reasonable to attribute at least part of the prevailing intestinal toxæmia in them to this. The weakness of the intestinal defensive mechanism was obvious in these patients. Warren Crowe had evolved a method of pathogenic selection, and this made the remedy more hopeful.

Dr. B. H. SHAW referred to his own attempts in this direction, giving a prepared meal each night. The meal was so unpalatable that after a short time he had to desist.

Dr. M. STEWART said that the theory that mental disease could be caused by the condition Dr. Shera described had come in for a good deal of criticism. The reason this subject had been worked at so persistently was obvious. When mental patients arrived they clearly had bowel poisoning, loaded intestine, foul tongue, bad breath, sallow features, and constipation, sometimes alternating with diarrhœa. There was also an increase in coliform bacteria, and a lessened quantity of those of the *acidophilus* group.

Dr. A. W. PETRIE agreed about the number of fallacies encountered in these investigations. Those who had done the plating of fæces had been struck by the abnormal plates of mental patients, especially in the increase of the non-lactose fermenters or the late lactose fermenters. In mental patients there had generally been a good deal of disease which had upset the flora. He suggested that taking the fæces for examination on the first arrival of the patients meant taking them at a time of temporary upset, and when they were in a particularly toxic state owing to neglect. He had sometimes succeeded in altering the flora picture of patients but usually he had not noted any coincident mental benefit. He would like to know what kinds of mental conditions were dealt with by Dr. Shera. The paranoid type would probably tend to have a normal intestinal flora, whereas the agitated or stuporose melancholic would have one that was more abnormal. On the whole, treatment along these lines had been, in his hands, rather disappointing.—Dr. W. F. MENZIES said that in Dr. Shera's long and painstaking work little was stated about the mental condition of the patients who were treated. Similar treatment based on earlier researches of asylum workers had not, he thought, brought about mental improvement as a rule.—Dr. G. W. T. H. FLEMING said that five years ago two Americans had shown that the liver had very little power of detoxifying histamine. He thought a good deal of work required to be done on those lines.

Dr. SHERA, in his reply, said his practice was to ask for a loose motion for the examination, but if the patient was constipated an aperient was given overnight. With the glucose broth method, however, he was indifferent about the type of stool ; the broth would show the bacillus if it were there. He did not claim that *acidophilus* therapy would necessarily eliminate the abnormal coliforms, but it was sound practice to try to re-establish that bacillus in the intestine. Prof. Embleton had told him of another way of eliminating the coliforms—namely, by giving an antivirus by mouth. Progress had not yet reached the stage when one could classify the flora according to the mental state. He reminded the meeting that any milk which was sour was not necessarily *acidophilus* milk.

HUNTERIAN SOCIETY.

MEMBERS of the Medico-Legal Society were invited to attend a meeting of this Society which was held on Nov. 18th. The President, Dr. E. C. YOUNG, occupied the chair, and Lord HOWE opened a discussion on

THE DOCTOR AND THE MOTORIST.

Quoting from Table D of the first report of the Royal Commission on Transport, he stated that over 6000 people had lost their lives on the roads of this country in 1928. It was quite possible to reduce this figure by at least 10 per cent., and it was imperative that some action should be taken at once. The speed-limit might be made a little higher, but if it were abolished the police would be compelled to prosecute for driving to the public danger. To be justly tried the cases would have to be heard at great length, and the work of the courts would be much increased. Moreover, he doubted whether the present courts were sufficiently well equipped to deal with this most difficult issue, and recommended—in case the speed-limit were removed—special traffic courts, analogous to the commercial court, assisted by technical assessors.

The six most prolific causes of an accident were, he said, all preventable: excessive speed, inattention, confusion or lack of judgment, failure to exercise care at road junctions, improper cutting in or out, failure to keep to the proper side of the road, and inexperience. A competence test alone would enormously reduce the casualties under these six headings. This test might be voluntary and conducted by local panels, who would issue graded certificates. The grade of a driver's certificate, or its absence, would be taken into account by the court and insurance companies would favour the driver with the good certificate, so that its possession would be a practical necessity. The allegation that the skilled driver was the cause of accidents was not borne out by Table D.

Dr. E. B. TURNER held that if the appalling tale of accidents was to be reduced it was vitally necessary to ensure by some form of test that drivers were physically fit. Among physical conditions which rendered a driver unsafe were bad sight, liability to petit-mal or epileptic fits, in some cases the loss of a limb, convalescence from certain illnesses, and progressive paralysis. The question of youth or age in relation to competence could only be decided in each individual case. His opinion of the woman driver was that "when she was good she was very very good, but when she was bad she was ——" unspeakable. On the whole, he thought women failed through expecting old-world courtesy in tight corners; courtesy was very difficult to extend when three cars were mixed up at a cross-roads. Nevertheless, they were improving every year. To illustrate his ideal of the fit driver he quoted Kipling's lines, beginning: "An even heart that seldom slows its beat, the cool head willing what that heart desires; the measuring eye that guides the hands and feet, the soul unbroken when the body tires."

The Team Spirit in Traffic.

Mr. MERVYN O'GORMAN said there was not one traffic problem but a cohort of problems which required a scientific approach. All that could be proposed to-day was a method of study, not a solution; anyone who pretended to have a solution was a public peril. Road safety demanded the continuous attention of traffic units to the job of being a traffic unit in traffic; anything that distracted drivers or walkers added to the risk of collision: bad name-plating, bad lighting, slippery patches, and vague signals, for example. When the sum of the demand approximated to a man's maximum capacity the danger line was reached; anything that made driving more difficult or fatiguing or called for simultaneous observation of more objects, or a wider angle of vision or quicker apprehension, could only be tolerated in so far as it added to the intensity of attention. The psychology and physique of the individual, therefore, was a factor. A far-reaching and compulsive rule was: "Show your intention and heed the other fellow's." No class of traffic unit could be privileged and yet be safe. Transport was required for wealth, life, happiness, and civilisation, and safe speed was essential for transport. The power to accelerate was a power for safety. The exercise of consideration by all to assist the free movement of all would give swifter movement to all. The team spirit was a cardinal necessity.

Dr. P. B. SPURGIN agreed with Mr. Turner's demand for a periodical test of physical fitness. He would apply it first to all drivers of commercial vehicles and of motors plying for hire, as most owner-drivers were medically examined from time to time for other reasons. To Mr. Turner's list of disqualifications he added heart disease; it was not uncommon to hear of elderly men, quite unfit, who had fallen dead at the wheel while driving passengers. Some form of insurance should be made compulsory to compensate both the motorist and the person injured, both by way of personal assistance and of defraying the cost of treatment in hospitals, which at present suffered much loss from treating motor casualties without payment.

Alcohol and the Motorist.

As a police-surgeon Dr. Spurgin saw a large number of motorists accused of being drunk in charge of a car; it was then his duty to say definitely, not whether the accused was fit to be in charge of a car, but whether he was drunk. He would, he said, be very grateful to anyone who could tell him what drunkenness was. The Lord Chief Justice had made the very definite statement that "drunk is drunk," meaning that there were no degrees of drunkenness, a maxim which was right in law and in common sense. There were, however, degrees of alcoholism, which was quite a different matter. A high authority had expressed the view that that person was drunk who had taken drink to such an extent as to disturb his mental balance and render him unfit to deal with the ordinary matters of daily life. This did not go quite far enough, and the best definition up to date had been that of the British Medical Association: that a man was drunk who at the material time was so affected by the influence of alcohol that he was unable to perform his ordinary functions normally. The ordinary function of the motorist was driving the car, and if he was overcome to any extent by alcohol he was unfit to drive a motor-car and therefore drunk. Like the seven ages of man, there were seven stages of drunkenness, and it was a moot point at which of them drunkenness itself began. The stages were: relaxation, bonhomie, expansiveness and loquacity (somewhat dangerous ground); cantankerousness (here there was little trouble in diagnosis), pugnacity, somnolence, and coma. The layman did not understand the difficulty of the problem presented by these border-line motor cases. Clever barristers sometimes pulled medical evidence to pieces in detail when the witness had based his opinion on the accused's condition as a whole, and their clients got off. Nevertheless, many suspects were released from custody at once because the police-surgeon could not quite certify them drunk, and those who escaped when actually charged were very lucky.

Some Practical Suggestions.

Mr. MASSAC BUIST reminded the meeting that the problem was to reduce, not necessarily the absolute number of accidents, but the number per mile per head. The work was badly hindered by the lack of statistics. The law of motoring would, he hoped, be made clear and up to date, but its administration was another matter altogether; while there were still magistrates who spent their time hounding the

police on to prosecute for every minor infraction, statistics based partly on police-court results would be deceptive. Public education was necessary in many directions. A factor which produced a large number of accidents was the general tendency to drive old cars, with their high centre of gravity and indifferent brakes, like new ones. It was also an astounding fact that many persons who had driven for months could not reverse their cars; the "fair-weather" driver was a great danger. Moreover, the percentage of drivers who could control a skid had never been so low. Many drivers needed education in the art of signalling without forgetting their own intentions and obstructing the traffic. It had been said that many roads were so steeply cambered that it was impossible to drive on the left; this was largely a matter of training, though manufacturers would have to pay more attention to the solidity of their wheels.

He recommended the American plan of making all drivers, at certain cross-roads, actually stop their cars before proceeding; this was a marvellous preventive of accidents. The weakness of a driving test was that it did not necessarily expose the candidate's ability to deal with an emergency. The insurance companies opposed compulsory insurance because they thought it would force them to take risks they would not otherwise accept, but Mr. Buist proposed that insurance against third party risks should be compulsory for drivers and optional for companies. This would make the companies the means of ridding the roads of the really bad drivers and—a less recognised danger—the bad example they set to beginners. The great difficulty in the way of financial assistance to hospitals for the treatment of motor casualties was that neither the press nor the public would take any interest in the movement. Insurance companies were at present unable to pay over to the hospitals any part of the sums awarded to their clients, and legislation was needed if this method were to be available. A very heavy fine should be inflicted on persons who absconded without payment after inducing local practitioners to treat them.

Discussion.

Lord RIDDELL advocated that doctors and hospitals who had treated motor casualties should have a right of action for fees with a first charge on the patient's vehicle.

Mr. BERNARD O'CONNOR suggested that all motorists should be trained and examined on the same plan as that applied by the London General Omnibus Company. In a collision with a pedestrian, when the court found contributory negligence on both sides, the motorist fared worse because he caused the injury.

Dr. CAMPBELL MCCLURE proposed and Sir BRUCE BRUCE-PORTER seconded a vote of thanks to the speakers.

Lord HOWE, replying, pleaded for the spirit of sportsmanship, which would go a long way towards solving traffic problems.

MANCHESTER MEDICAL SOCIETY.

AT a meeting held at the University on Nov. 6th Prof. E. D. TELFORD described two cases of

Hydatid Disease of the Lung.

The first case was that of a boy, aged 14 from whom a large cyst of the lung was easily removed by thoracotomy. In the second case, a woman of 40 had made a complete recovery after the spontaneous expectoration of two very large hydatid cysts of the lung. Dr. Telford emphasised the frequency of multiple cysts in the same patient and produced evidence to show that the hydatid cyst was of much slower growth than was commonly supposed. Diagnosis was based on the occurrence of eosinophilia and anaphylactic phenomena with the aid of the complement-fixation and Casoni tests. Small hydatids deeply placed in the lung might, he thought, be left to expectant treatment, but hydatids near the pleural surface should be submitted to operation owing to the risk of rupture into the pleural cavity.

Dr. FERGUS R. FERGUSON read a paper on the

Familial Ataxias.

The term, he said, was originally employed to denote a number of cases of ataxia with an hereditary or familial incidence, but as the years have gone by it has come to be used to include a variety of different diseases, many of which show little or no ataxia. The tendency has been to regard these diseases as more or less distinct and separate entities, although for the sake of convenience they are generally included in a neurological text-book under the same heading. The group includes the ataxias associated with the names of Friedreich, Marie, Sanger Brown, and Neff, families described by Klippel-Durante, Cestan and Guillain, Ballet and Rose, Batten, Miura, so-called familial disseminated sclerosis and familial spastic paralysis. The cases described by Sanger Brown and Neff seemed to be confined to the original family, but Gordon Holmes had clearly shown that there were numbers of cases masquerading under the name of Marie which were quite unlike his original "hereditary cerebellar ataxia." The clinical picture, in fact, varied according to which system—psychological, cranial nerves, pyramidal, extrapyramidal, sensory, and cerebellar—was affected. The probable unity of these various diseases was suggested by the occurrence of Friedreich's and Marie's form in the same family (Bayer and Gy, Ferrier and Chassin), by transition types between the two (Perrero, Lenoble, and Margulies), and by the evidence of a family, investigated by Dr. Macdonald Critchley and himself, in which 13 members were affected, most of them with the following features: (1) age of onset, 35–45; (2) euphoria and emotional instability; (3) ocular paralyses, nystagmus, and optic atrophy; (4) evidence of pyramidal disease; (5) widespread sensory disturbances; (6) certain extrapyramidal manifestations. Superficially, some of these cases resembled and had been diagnosed as Parkinson's disease or disseminated sclerosis. Although post-mortem evidence was lacking, probably all had a common pathological basis in hereditary abiotrophy of the neurones.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

CLINICAL CASES.

A MEETING of this Society was held at the Aberdeen Royal Hospital for Sick Children on Nov. 7th, Prof. A. LOW, the President, being in the chair, when a demonstration of clinical cases was given by members of the staff.

A Case of Spinal Curvature.

Mr. A. MITCHELL showed a boy of 7 with a year's history of pain in the back and loss of weight. On examination there was scoliosis of the dorsal region of the spine with curvature to the right and slight kyphosis. The last dorsal and first three lumbar vertebræ were prominent. There was pain in the lumbar region on jarring the spine. The boy walked unwillingly, with a crouching gait, supporting himself by holding his thighs. There were no signs of pressure on the spinal cord or nerve roots. The Wassermann reaction was negative. X ray examination showed the presence of lesions involving three pairs of vertebræ, ninth and tenth thoracic, twelfth thoracic and first lumbar, and third and fourth lumbar. Mr. Mitchell did not think that the lesions were tuberculous, in view of their multiple nature, but suggested the possibility of a multiple septic infection.

Extra-medullary Spinal Tumour.

Dr. JOHN CRAIG showed a case of extra-medullary spinal tumour in a girl aged 8 years. There had been root pains for 18 months with some loss of power and stiff gait for about three months. Motor and reflex signs localised the lower level of the tumour at the fourth lumbar segment, and sensory and reflex signs placed the upper level at the tenth dorsal segment. The cerebro-spinal fluid showed a modified Froin syndrome—xanthrochromia, increased globulin and only four cells per cubic millimetre. Lipiodol injection had not yet been done. Dr. Craig also brought a case of congenital heart disease for demonstration.

Acute Mastoiditis.

Dr. H. R. SOUPER gave an account of a case of acute mastoiditis with lateral sinus and internal jugular thrombosis. The patient, a boy of 10, was admitted to hospital with a history of acute pain in the left ear for one week and discharge from that ear for one day. His temperature on admission was 103·6° F. There were no signs of mastoiditis and he was kept under observation as a case of acute suppurative otitis media threatening complications. His condition did not improve for 48 hours when blood culture showed the presence of hæmolytic streptococci and operation was performed under gas and oxygen anæsthesia. The mastoid cells were found widely infected and the lateral sinus thrombosed. The jugular vein was exposed in the neck and on incision was found to be also thrombosed as far down as it could be dissected. The sinus was cleared of clot; the jugular vein was tied as high and as low as possible and excised, the facial vein being also tied off. At the end of the operation 300,000 units of scarlet fever antistreptococcic serum were injected intravenously. The following day the condition of the patient was extremely grave. There was a loud musical bruit at the apex of the heart and acute nephritis with albumin, blood, and casts in the urine. Six similar doses of serum were administered within ten days of the operation and by the end of a fortnight the condition of the patient was satisfactory. The blood culture was sterile, the cardiac bruit had disappeared, and the urine was normal. Dr. Souper was of the opinion that recovery in this case was mainly due to the use of the serum. Since April, 1927, he had employed scarlet fever antistreptococcic serum in his cases of septicæmia, 10 or 12 in all, mostly with hæmolytic streptococci and mostly aural in origin. Every case had recovered with one exception where a late thrombosis in the jugular bulb occurred. He had previously used ordinary antistreptococcic serum, intravenous mercurochrome, and other remedies in similar cases without success. He suggested that where septicæmia was due originally to infection from the throat or nose, the scarlet fever serum should be used. He was indebted for the suggestion to make use of this serum in the first instance to Dr. John Smith of the Aberdeen City Hospital.

Mr. ANDREW FOWLER demonstrated a case of tuberculous disease of the spine.

MATER MISERICORDIÆ HOSPITAL, DUBLIN.—This hospital has just issued a very complete analytical report for 1928. There are now 412 beds, and last year the in-patients numbered 4686, an increase of 580; their average stay was 22·4 days. Out-patients numbered 36,490, the highest figure on record. It is pointed out that the institution has consistently led the way in Ireland in the application of new methods and discoveries, and consequently the laboratories have had to be considerably enlarged, while an elaborate record system has been established. A new radiological department is being constructed, the number of examinations having increased in the last ten years from 673 to over 3000. The cost of drugs has risen in 15 years from £497 to £1195. The general mortality was 2·86 per cent. and diabetes mellitus provided the largest number of medical cases—85. The hospital is under the care of the Sisters of Mercy; for many years they were the sole nurses, but there is now a training school with 130 probationers.

Reviews and Notices of Books.

LE CANCER.

Second edition. Par GUSTAVE ROUSSY. Avec la collaboration de ROGER LEROUX et MAURICE WOLF. Fascicule v., tome II. Nouveau Traité de Médecine. Paris: Masson et Cie. 1929. Pp. 846. Fr.100.

Prof. Gustave Roussy, of the Faculty of Medicine of Paris, originally a neurologist of eminence, subsequently turned his attention to the investigation of new growths, and in 1922 contributed to the *Nouveau Traité de Médecine*, brought out under the auspices of Profs. G. H. Roger, F. Widal, and P. J. Teissier, the volume dealing with cancer which he has now completely revised with the collaboration of his friends and former pupils, Dr. Roger Leroux and Dr. Maurice Wolf. This large and beautifully illustrated work covers the whole ground of malignant tumours, and does even more, for accounts are given of benign new growths, of cancer in animals, and of tumours in plants. A welcome feature is the frequent quotation of the work done by English-speaking authorities, both British and American.

After a sketch of the history of malignant tumours from Egyptian and Hippocratic times to the end of the nineteenth century, the important subjects of ætiology and pathogeny are passed in review. The hypotheses as regards pathogeny are divided into old and new, and in the second category five hypotheses are summarised: the recent microbic; the virus and chemical factor of Gye and Barnard; the hypothesis that it is a disease of the cells; the chemical or glycolytic; and the mitotic conception put forward by Boveri, Gurwitsch, Magrou, and Perrin. Prof. Roussy considers that malignant disease is a cellular, perhaps a nuclear disorder, the exciting cause of which is unknown but is not a living agent comparable to that responsible for the infections. The biological and morphological characters of neoplasms are regarded as quite different from those of inflammation, and it is suggested that the tendency to repeat investigations based on the affinities of inflammation and new growth may in some degree account for the failure to discover the secret of cancer. The cellular disturbance responsible for malignant growths is considered to be acquired and not to be congenital, due to malformations, or hereditary. Prof. Roussy has had the collaboration of Dr. Leroux in the section on the morbid anatomy and histology of tumours, which occupies nearly a third of the volume, and is copiously and most successfully illustrated, especially the part dealing with tumours of the nervous system. This is followed by a chapter on the pathological physiology of cancer, in which Prof. Roussy and Dr. Wolf first study the transformation of the normal into the malignant cell from the morphological, chemical, and physico-chemical aspects, and then consider the growth, invasive, and generalising properties of cancerous tumours. After an account of cancer in animals, in which the experimental production of cancer and the work of Peyton Rous, Murphy, and others is duly noticed, and of plant tumours, the general clinical picture of malignant growths is discussed, and the various forms of treatment are reviewed. Under the heading of cancer from the sociological point of view, the incidence of malignant disease in Europe, America, and Japan is first considered, and then the history and scope of organisations in France and elsewhere for the control of this scourge are set out.

The undoubted value of this fine monograph as a source of authoritative reference is enhanced by the long bibliography at the end.

IMMUNITÉ ET VACCINOTHÉRAPIE.

Par le Dr. LOUIS MOINSON. Paris: Librairie Le François. 1929. Pp. 98. Fr.6.

THIS little book presents a summary of the essential facts of the immunity reaction to infection, facts

which might be gathered by a careful student attending a post-graduate course of instruction on applied bacteriology. It includes a short description of the methods of obtaining material for the preparation of vaccines, and of their use in the treatment of the common infections with staphylococci, colon bacilli, and catarrhal nose and throat organisms. The author is an enthusiastic advocate of vaccines in treatment; indeed, he states that there are only two methods of treating disease. The infectious diseases he would treat always with vaccines, and other diseases with gland extracts. He does not, however, mention the vaccinotherapy of tuberculosis, a subject which offers a large and difficult field for discussion. In a few pages the main phenomena of anaphylaxis are described. Peptone is recommended for the treatment of the anaphylactic state, but the use of adrenalin is not mentioned as a measure for treating anaphylactic shock. The book is clearly written, and could be used as an introduction to a post-graduate course or by practitioners who wish to refresh their memory of the phenomena of immunity. It is too slight to be of value to the specialist.

NAVAL HYGIENE.

By Surgeon-Captain THOMAS B. SHAW, R.N., Professor of Hygiene, Naval Medical School, Greenwich. London: Humphrey Milford, Oxford University Press. 1929. Pp. 365. 21*s*.

WE welcome this book by a naval medical officer, the first on its subject to be published in this country since the "Outlines of Naval Hygiene" by Inspector-General John D. Macdonald, F.R.S., came out in 1881. In the interim the United States gave us in 1909 a valuable study by J. G. Gatewood, who popularised the idea of "wild heat," and J. C. Pryor's well-known work came in 1919. Surgeon-Captain T. B. Shaw has now supplied a complete and judicious handbook which details adequately the current Admiralty practice; it does not concern itself with merchant ships except where they work with the Navy, which is generally in war-time. Every medical officer in the Navy will be grateful for the clear exposition of the duties which fall to him in his task of preserving the health of his men in their relations to one another and to the outside world. Captain Shaw begins with ventilation, the greatest of the hygienic needs of men in ships. Each man is expected to have 200 cubic feet of space (350 for men in the sick bay or hospital), and should be given 3000 cubic feet of fresh air per hour, most carefully guided and directed that there shall be no unpleasant draught. Ships are so complicated in construction that natural ventilation has dropped into the background, except as a luxury, and it is on artificial ventilation that the captain relies. The ideal is a temperature of 62° F. with a relative humidity of 60–70 per cent.; apart from table fans little can be done to cool a ship beyond using awnings and white paint and keeping her dry; but steam radiators (and electric stoves in small spaces) keep her warmed up to 65°, preferably no higher, and a "ventilation party" constantly travels round to see all ventilating devices are working well. Places where the air becomes foul, hot, moist, or contaminated are exhausted (bakehouses, for example, when the bread is rising); to the rest of the ship air is supplied. The carbon dioxide maximum is 1·2 per 1000. Oxygen may be reduced as low as 16 per cent. without inconvenience, though cyanosis occurs when it falls to 10 or 8 per cent. Pallor shows danger at this stage and at 5 per cent. respiration ceases; but cylinders of oxygen are supplied for use in sealed compartments, as in a submarine, when the oxygen percentage has fallen to 16. As to lighting, the great aim is to provide light sufficient for the work to be done but without glare. Extreme care is taken to provide water that shall be safe, and chlorination is done whenever there is cause for suspicion. An interesting chapter details all the foods supplied to the sailor, their constitution in calories and vitamins. The messing arrangements are continually being improved and have completely changed since Mr. H. Vincent wrote "A Stoker's Log" on his war experiences; his complaints about the messing have been entirely met. The calorie values of the rations for cadets and boys are given as 3700–4000; boys at sea get about 400 calories over the man's ration. To teach the men to preserve their health they are given lectures on hygiene, on tuberculosis, food poisoning, venereal diseases, and films are shown to them. In foreign ports rest rooms are provided near the quay, and thus the menace of drink is minimised. Captain Shaw finds that alcohol increases sexual desire, lessens self-control, and prevents local prophylaxis against venereal disease. The official prophylactic is a 1/750 oxycyanide of mercury jelly, but a condom is considered the most efficient. Captain Shaw tells us that more respect is given now than formerly to the suggestions of the medical officer. Perhaps that is one of the reasons why the morbidity and mortality of the Navy have fallen by half in the last 30 years.

THE EYE IN GENERAL MEDICINE.

The Constitutional Factor in the Causation of Disease, with Special Reference to the Treatment of Diseases of the Eye. Second edition of *Diathesis and Ocular Diseases.* By A. MAITLAND RAMSAY, M.D., Consulting Ophthalmic Surgeon, Glasgow Royal Infirmary. London: Baillière, Tindall and Cox. 1929. Pp. 255. 12*s*. 6*d*.

A PROPOSAL was once made by Dr. Rayner Batten [1] that the ophthalmic physician should be recognised as being of equal importance with the ophthalmic surgeon. Dr. Maitland Ramsay's book may serve as a good illustration of his thesis. It is concerned not only with ocular signs as an essential part in the diagnosis of many general diseases, a subject which every general physician now fully appreciates, but still more with the importance of general physiology and pathology in the diagnosis and treatment of diseases of the eye, a matter in which the ordinary training of an ophthalmic specialist is perhaps too apt to leave him more or less at sea. The first chapter is entitled "The Living Eye considered as one of Nature's Laboratories," and lays stress not only on the importance of the ophthalmoscope to the general practitioner but of testing the light sense as a guide to the diagnosis of certain forms of eye disease in their early stages. The second chapter deals with the constitutional factor in disease with special reference to some ocular manifestations of disordered carbohydrate metabolism. In this connexion there are useful hints on the pathology and treatment of phlyctenular disease in children and of the ocular manifestations of hyperglycæmia in adults. A long chapter is devoted to defective elimination. Renal inadequacy short of any actual disease of the kidneys is responsible for many affections of the eye. The accumulation of toxic substances in the blood causes dilatation of the capillaries of the retina and choroid, a danger-signal which it is claimed gives definite ophthalmoscopic signs. Ocular symptoms include photophobia, and, later, defective vision which, if the condition is allowed to continue, may go on to definite optic atrophy. This is an important observation. Cases of optic atrophy, not dependent on any of the generally recognised causes such as tabes, are not infrequent, and if Dr. Ramsay is right—and he cites cases to prove his thesis—many of them might probably have been prevented by treatment directed to elimination in their early stages. The connexion of iritis and irido-choroiditis with toxæmia is now well recognised.

In a chapter which deals with the ætiology of acute primary glaucoma Dr. Ramsay fully accepts the recent work of W. S. Duke-Elder. An important element in the causation is comparative stasis and therefore dilatation of the intra-ocular capillaries. The cause of these changes is not likely to be found in the eye itself but must be sought for in the state

[1] THE LANCET, 1919, ii., 962, 1084.

of the patient's general health. In another interesting chapter a correlation is found between the vital processes in the eye and those in the rest of the body. It is especially well illustrated by the acute pain which is caused by the spasm of unstriped muscle. Photophobia in the eye, angina pectoris in the heart, strangury in the bladder, and colic in the abdomen are all examples of pain from this same cause, and the pain persists until the spasm is overcome. The analgesic effect of atropine upon the eye is due in all cases to its overcoming the spasmodic contraction of the sphincter of the iris. The correction of errors of refraction by glasses is considered from a similar point of view, and also the treatment of those not uncommon cases of "eye-strain" in which the correct prescription of glasses is found to be of no avail. In a chapter on pneumococcal infection the action of the pneumococcus on the cornea is shown to be analogous to its action on the lung. The value of ophthalmoscopic examination of the retinal blood-vessels in cases of cardiovascular disease is now so well established that the chapter on this subject provides no more than a useful summary of modern knowledge.

The book is full of good matter. The gist of its lesson is that diseases of the eye can never be properly understood until they are considered in relation to the physiology and pathology of the body as a whole. The young practitioner will be grateful for an appendix containing a number of medical prescriptions suitable for the kinds of treatment recommended in the text.

DIAGNOSIS OF SPINAL DISEASE.

Le diagnostic dans les affections de la colonne vertébrale (chez l'adulte). By P. OUDARD, A. HESNARD, and H. COUREAUD, Professeurs à l'école d'application du service du santé de la marine clinique chirurgicale de l'Hôpital Sainte-Anne à Toulon. Preface by Prof. SICARD. Paris: Masson et Cie. Pp. 256. Fr.36.

THIS book is confined to diagnosis to the exclusion of pathology and treatment. The subjects of which the diagnosis is discussed include Pott's disease in the adult, all the forms of chronic spondylitis, osteomyelitis, cancer and syphilis, and also congenital malformations of the spinal column. Directions are given for epidural, injection of lipiodol, and for aspiration of the lower end of the sacral canal and of the lumbar region for analytical purposes, and the study of the pressure of the cerebro-spinal fluid is also discussed. The volume is very well illustrated. The coloured plates showing the relations of the segments of the cord and vertebræ to external parts should be especially useful. The scope of the book is so limited that almost for any purpose it would have to be supplemented by others on pathology and treatment, but such information as is given is accurate, complete, and up to date.

RECENT ADVANCES IN MEDICINE.

Fifth edition. By G. E. BEAUMONT, M.A., D.M. Oxf., Physician with Charge of Out-patients, Middlesex Hospital; Physician to the Hospital for Consumption and Diseases of the Chest, Brompton; and E. C. DODDS, M.V.O., M.D., Ph.D., B.Sc., M.R.C.P. Lond., Courtauld Professor of Biochemistry in the University of London; Director of Courtauld Institute of Biochemistry, Middlesex Hospital. London: J. and A. Churchill. 1929. Pp. 442. 12*s.* 6*d.*

THE arrangement of this popular book has been altered slightly in the new edition, and the chapter dealing with the diagnosis of enterica infections, with part of the chapter on disorders of the endocrine system, has been omitted to allow space for the introduction of new material. Additions include a clinical classification of nephritis with both clinical and biochemical findings, with a discussion of treatment and diet. The modified Sippy diet is given at greater length; the account of diabetic coma has been amplified and circulatory failure in this connexion has been considered; and a long paragraph is devoted to the administration of liver diet in pernicious anæmia. The writers maintain their principle of attempting to estimate, as far as possible, the value of the various diagnostic and therapeutic measures described, and at the same time to supply full practical information on the performance of all laboratory tests recommended.

Though the book is compiled with fine judgment in the selection of matter, yet we suggest to the authors that the actual arrangement might be still further improved; for instance, in the chapter on renal conditions, the tests of renal function—which necessitate frequent references to the kidney lesions in which they are of particular value—are described first, and the classification of nephritis comes at the end of the chapter, so that the reader is constantly looking either forward or backward for information. This arrangement is intentional since it is followed throughout the book, but it involves repetition. Where so much complicated information is so well expressed suggestions for improvement cannot be made lightly, but a rearrangement by which the tests were mentioned in relation to the conditions in which they were chiefly of value, followed by an analysis of tests similar to that already presented, deserves consideration.

The book has well justified the claim made for it by its authors in the preface to the first edition that it is a link between the wards of a hospital and the laboratories.

RADIUM AND ITS SURGICAL APPLICATIONS.

By H. S. SOUTTAR, D.M., M.Ch. Oxf., F.R.C.S. Eng., Surgeon, London Hospital. London: William Heinemann, Limited. 1929. Pp. 60. 7*s.* 6*d.*

IN this little book the author has attempted to explain in the simplest form those physical properties of radium upon which its surgical action depends, to describe briefly the methods of application in general use, and to illustrate them from examples in his own experience. Within them self-imposed limitations the book conveys an impression of the results already obtained, supplemented by a glimpse into the triumphs of the future which an alliance of radium therapy with surgery may bring. The reader must look elsewhere for the general trend towards irradiation at a distance. Some surgeons, however, will not be able to indorse the statement in the chapter on carcinoma of the breast that "the results at least equal those of operation"; and the subsequent assertion that "equal success is obtained with screened radon seeds" may need qualification when, in the illustrative cases, periods of time of ten days, six weeks, and four weeks only are quoted in the assessment of immediate results. It should not be forgotten that the positive results obtained by implantation have been achieved with much more prolonged sources of irradiation; their replacement by screened seeds is still in the nature of a cautious experiment. In sundry matters of detail the book contains apparent contradictions which could, no doubt, be reconciled by the author if he had given himself more space; the book is frankly introductory. It is, moreover, attractively written and may easily whet the appetite of the reader for more information on the subject of radium therapy.

LANDMARKS AND SURFACE MARKINGS OF THE HUMAN BODY.

Seventh edition. By L. BATHE RAWLING, F.R.C.S. London: H. K. Lewis and Co., Ltd. 1929. Pp. 98. 7*s.* 6*d.*

IT is hardly necessary to do more than refer to the fact that this little book has added another edition to the number of its issues, for it has long taken on the character of a household necessity among surgical students and practitioners, and is perhaps the best known and appreciated of all the ancillary books with which they are concerned.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 23, 1929.

THE RADIUM PROBLEM.

LAST week the National Radium Commission outlined in the public press the general lines on which the radium entrusted to them will be distributed. The Fund which provides radium for the use of the medical profession in its campaign against cancer now amounts to nearly £300,000, of which £100,000 was contributed by the Government. Some preliminary decisions of the Commission have already been recorded,[1] including the allocation of a four-gramme radium bomb to Westminster Hospital, and the institution of a radon plant at the National Physical Laboratory. The object of the press communiqué was rather to enable the wider public to assess the proper value of radium in the treatment of malignant disease. Extravagant claims have been made even from the medical side; the communiqué quotes with disapprobation a statement attributed to a member of the medical profession at a recent meeting to the effect that, on a five years' average of a series of cases of cancer, radium had effected a cure in 60 per cent. of operable cases, in 37 per cent. of border-line cases, and in 28 per cent. of inoperable cases. Such figures are in the opinion of the Commission "cruelly misleading." The true facts of the position are summarised as follows.

It has been proved for many years that radium has a powerful effect on various affections of the skin, and that rodent ulcer and cancer of the skin can usually be completely cured by its use. During the last few years the technique of radium therapy has been elaborated and greatly improved by the use of radium needles, or of seeds containing radium emanation (radon), which are buried in the tissues in or around the growth. Most of the work done in this country, so far, has been directed towards the treatment of cancer of the womb, the lower bowel, the breast, and the tongue and mouth cavity. It can be stated definitely that in the above-mentioned regions, as the result of long and hard work, of many trials and many errors, a big step forward has been made. Encouraging as are the results already obtained, it must not be assumed that radium can cure all cancers, for this is not yet the case, and many problems remain to be solved. The attack on the primary growth is, in a sense, the easiest part of the task, for if the growth is accessible and radio-sensitive; if the radium is implanted in the right place; if the whole of the tumour is irradiated; if the dose is correct; and if the exposure is rightly timed; then one may expect the shrinkage and disappearance of the tumour. Radium therapy, however, if it is to be successful, must aim at destroying not only the primary growth but also any extensions which may have formed in the neighbouring glands. In the course of the work one point that has come out quite clearly is that destruction of a primary growth, followed by its complete disappearance, does not generally affect the development of secondary growths, if these are already formed, any more than excision of a cancer of the breast by the knife will cure a patient if there are secondary deposits in the interior organs.

Facts are not yet available, in the Commission's opinion, to assess the relative value of radium therapy and surgical excision in the treatment of cancer. Most of our information is limited to special regions of the body and even in these there has not yet been time to prepare statistics which can show a true and complete picture. One great point in favour of radium is that its use does not involve the risks and suffering associated with excision; the introduction of the radium is in itself a comparatively slight operation, and the patient suffers little if any discomfort from its presence in the body. Patients should therefore be far more ready to consult their doctors, instead of concealing or disregarding their symptoms till it is too late for any form of effective treatment. So far, the successes achieved have mostly been by means of superficial applications, by buried needles, by radon seeds, or by the combination of these three methods. Little has been done in this country in the radiation of tumours from a distance, a method which urgently demands investigation; this requires large quantities of radium which have not hitherto been available and the loan to the Westminster Hospital is the first step in this direction. Summing up, the Commission is satisfied that a good case has been made out for the increased employment of radium. A new weapon, and a powerful one, has been placed in the hands of the medical profession, though how effective it may be it is impossible as yet to say. Nor is it yet established whether patients with malignant disease should be treated with radium alone, or with radium combined with surgery or X rays. It is probable that a judicious use of all three methods may be indicated; but in any case clinicians must be familiar with them all. What is needed at the moment is intensive work on the many problems which present themselves, combined with careful documentation of the methods used and registration of the results obtained. This calls for the close coöperation of physicists, clinicians, radiologists, and pathologists. Meanwhile good and effective use can be made of all the radium which will shortly be available from the Fund. The most pressing need, however, is for more workers trained in the highest standards of technique, and one of the first efforts of the Commission will be directed towards augmenting the supply of skilled personnel.

We are of the opinion that this statement of the Radium Commission is not only timely but to the point. Big expectations have been raised in the minds of the public, and it is only right that these should be reduced to the level of general medical expectations—and these are still sanguine. The statement has reached a section of the public which reads what may be termed the more responsible type of newspaper. There is a vast public outside this section, and ways should be found by which the information can be got to them, whether by broadcast or by a reprint in leaflet form for which no charge is made. It might be possible for medical officers of health all over the country to see that this warning reaches those who may otherwise continue to let their hopes of the curative value of radium outrun all reasonable expectations.

[1] THE LANCET, Oct. 5th, p. 724; Oct. 19th, p. 883; Nov. 9th, p. 993.

THE TREE AND THE FRUIT.

THE British Science Guild was founded in 1905 by NORMAN LOCKYER, the famous physicist and astronomer, who died some 15 years later. The object of the founder was to promote by organised effort the application of scientific methods and their practical issues to public affairs generally, thus instructing the country that it must look to science, as it advances, for the main solutions of fundamental social problems. In an appeal directed to the public last week by Lord MELCHETT (the president of the Guild), Sir RICHARD GREGORY and Dr. J. S. YOUNG (respectively chairman of the executive and finance committees of the Guild), and Lady LOCKYER, assistant treasurer, it is indicated that the advancement of science for public good lies especially within three spheres of endeavour—namely, that of research, that of education, and that of propaganda in advocacy of the benefits to be obtained through science alike by Government departments, educational and local authorities, and individual employers. This last sphere of work for public good the Guild claims to have filled successfully by the aid of experts in science in all its branches, whose aid has been given gratuitously, a fact which enforces the appeal of the Guild for financial support.

Under the foundation of the Guild lectures are given each year associated with the name of NORMAN LOCKYER, and last Tuesday the fifth of these lectures was delivered in the Hall of the Goldsmiths' Company by Sir WALTER FLETCHER, secretary of the Medical Research Council, who asked a large audience to consider broadly the field of work which is tilled by the followers of medicine. With such a scope for an address the lecturer could only attempt to dwell upon certain features or episodes that have significance for our guidance at the present time, and in the historical drama of the evolution of medicine he selected the changes during the three centuries between the accession of HENRY VIII. and QUEEN VICTORIA as illustrative of the whole story. In an interesting comparison of the development of the mathematical, chemical, and physical sciences with that of medical science, he pointed to the fact that in the former there had been a progress that had been continuous in the main from the days of Greek civilisation onwards, while in the latter there have occurred significant breaks in the forward march. Clearly during the Dark Ages there was no regular development in our knowledge of physics, but, despite the huge material obstacles, the study of both mathematics and chemistry was maintained. In the case of medicine, however, the scientific status remained unaltered, save in a few sporadic directions, between the first century B.C. and the seventeenth century. Here and there discoveries that proved of value were made sporadically, but for the most part the superstitions of old mythology befogged the path of medical learning, prevented the doctor from searching out the truth on the lines of natural philosophy, and even prevented him from following the teachings of HIPPOCRATES, whose doctrines throughout this long period represented the truth. These doctrines lost by the inventions of many disciples and gained little from any additions to knowledge of natural philosophy. This is a curious reflection when we remember the debt that modern developments of professional equipment owe to our increased familiarity with physics and chemistry and their mathematical and physical foundations. Why did not the acquisition of physics, which proved so fruitful of result in the material and moral development of the world, have no correlating influence upon medicine and surgery? To this question there is no single answer, but two circumstances are predominant as contributing to the explanation, if not explaining the anomaly. First the material with which medicine and surgery have to deal cannot be treated in the main on mathematical or logical grounds; and secondly, when the rule and the balance can be trusted, the microscope is very generally an adjuvant for the obtaining of necessary information, and the microscope did not arrive until after the death of HARVEY.

And now, in compensation for the lagging of the past, we have so fierce a rate set to medical progress that neither our educational machinery nor our laboratory methods can keep pace. Not only, as Sir WALTER FLETCHER pointed out, has medical knowledge come so tumultuously as to allow no proper time for the adjustment of the traditional system of medical training, but the new learning is often so directly associated with researches in the domains of physics and chemistry, which can only be conducted by experts along their own lines, that the initiative often passes from the physician to the scientific worker in the laboratory. These words must not be taken to imply a supersession of medicine, for their significance is exactly in opposition to this; we have, on the contrary, a practical proof here of the growth and development of medicine, in that the art and science of healing are steadily annexing the results obtained by workers engaged in other provinces of wisdom. But as these provinces, as well as the province of medicine thus allied to them, are alike in the stage of a rapid acquisition of knowledge, it can be readily believed that scientific workers are sorely needed. What is not so easy to believe, though equally true, is the fact that these workers, even the leaders among them, are not duly rewarded by the public. Though the happiness of the world's future may depend upon the activities of the army which is wresting from Nature her secrets, that army is undermanned and ill-paid.

CANCER OF THE STOMACH.

SOME 16,000 persons die annually in Great Britain from cancer of the stomach. So rare is it for a case of this disease to be cured, or even to give the semblance of cure for an appreciable period after treatment, that many clinicians state freely that they have never seen such an occurrence, and surgeons are glad to exhibit at medical societies any rare cases in which they have been able to prolong life for more than a few years. At a time when the whole world is more than ever interested in cancer research, and when the activities of the Radium Commission are raising hopes which have never been entertained before, it is perhaps salutary, if discouraging, to reflect that at the present day there exists even with the latest radiological technique no real avenue of hope for the sufferers from this, the commonest of all forms of cancer. Established cancer of the stomach is not difficult to diagnose—tumour formation, vomiting, and cachexia are signs which are unmistakable and are usually harbingers of impending doom; but apart from these late features, there exist to-day diagnostic facilities which enable this disease to be recognised by the expert physician after quite a brief observation of the patient whose dyspepsia or other early signs have led him to seek advice. In the course of the discussion at the Medical Society of London on Nov. 11th,

which we reported last week, it was made clear that even when clinical examination yields no clue, the competent radiologist can detect loss of motility in the gastric wall, early malignant ulceration, or a minute filling defect in the very early stages of cancer of the stomach. Moreover, the expert in gastric analysis is able to find changes from the normal picture of gastric secretion yielded after a test-meal, which confirm the suspicions of the physician.

Even when cancer of the stomach is diagnosed practically as soon as the patient seeks medical relief, there is little hope of cure. The clinician of the future will either have to discover entirely new methods of treatment, or, if reliance is to be placed upon existing methods, to diagnose the disease before ever it gives rise to symptoms. In the face of this problem any authoritative comments on the precursors of carcinoma of the stomach are clearly of interest. Dr. A. F. HURST thus chose a valuable subject for his Schorstein Lecture, which appeared in our columns last week. Starting with his expression of belief that cancer never invades a healthy stomach, he proceeded to discuss the conditions which he believes to be its precursors. The old idea that free hydrochloric acid was absent in practically all cases of cancer of the stomach has been banished since the introduction of fractional gastric analysis, and most experienced observers now agree that this acid is to be found in about half the cases examined if it is carefully sought for. It still remains a remarkable fact that a considerable proportion of cases of cancer of the stomach exhibit achlorhydria, and Dr. HURST believes that this condition is not the result of malignant change but is an expression of chronic gastritis which has been present in the patient perhaps for many years, and has been the predisposing cause in the development of the carcinoma. His personal experience goes to show that achlorhydria does not develop in the course of the disease, and that among cases of cancer of the stomach in which the history of dyspepsia is short the majority can be shown to exhibit this phenomenon. It is now generally recognised that one of the most important functions of the gastric secretion is to sterilise, at any rate partially, all material which enters the stomach. When, therefore, the secretion of acid is defective, not only is the softening and dilution of the foodstuffs impaired, but any pathogenic organisms swallowed have ample opportunity to increase the irritation thus mechanically produced. In this way progressive damage to the secreting tubules and mucous membrane develops, and in time an achlorhydria, which at first may have been due to temporary blockage of the secreting glands, becomes permanent owing to the destruction of these tissues. Earlier recognition of achlorhydria and gastritis might be expected if patients could be persuaded to submit themselves to routine examination during various periods of their lives, and in this way treatment might be more frequently instituted at an early stage. Dr. HURST believes that the other group of cases which show a very definite concentration of hydrochloric acid are for the most part those of malignant change occurring in a chronic gastric ulcer. These cases form the majority of those in whom the history extends back for more than a year, and he believes that in this group must be placed about 20 per cent. of all cases of cancer of the stomach. With this conclusion many physicians will find it difficult to agree. It is true that a number of surgeons of great experience, including such authorities as Lord MOYNIHAN and the surgeons of the Mayo Clinic, have taught that malignant change is by no means uncommon in chronic gastric ulcers. Their opinion has been founded largely upon the histological reports on material removed at operations. The figures of L. B. WILSON and W. C. MACCARTY from the Mayo Clinic purported to show that the vast majority of cases of cancer of the stomach gave histological evidence of previous simple ulcers, and that 68 per cent. of apparently simple peptic ulcers, when resected, showed evidence of malignant change. These figures have been much disputed both in this country and in the United States. The evidence is subjected to close analysis in the important book on "Gastric and Duodenal Ulcer" recently published by Dr. A. F. HURST and Prof. M. J. STEWART,[1] where the latter carefully surveys the results of work on material received in the pathological department of the University of Leeds in recent years. Prof. STEWART'S series included 259 specimens removed at operation; 70 of these were frank cases of carcinoma, 11 of which were held to yield strong evidence that a simple ulcer had preceded them. Of the remainder, 11 showed early malignant change in the margin of an apparently simple gastric ulcer. Prof. STEWART believes these figures to be on the conservative side, in that a short history in some of the cass of obvious cancer did not, in his opinion, exclude the possibility of a rapid malignant change in an ulcer which was originally simple. This evidence has clearly been responsible to some extent for Dr. HURST'S belief that a chronic ulcer is the precursor of malignant disease in 20 per cent. of all cases of cancer of the stomach.

The reasons why many will disagree with him must, however, be stated with equal prominence. In the first place, the opinion of a pathologist, however eminent and careful, as to whether a lesion in any given specimen of malignant disease examined has been present for years as a benign ulcer is at best an opinion which would not be easy to prove conclusively. In the second place, it is impossible to escape from the remarkable fact that practitioners and physicians who have cases of chronic gastric ulcer under their care, sometimes for many years, do not see these cases gradually transformed into examples of cancer of the stomach. Dr. HURST in his Schorstein Lecture records only one case in which he believes he has seen the development of malignant change from a simple peptic ulcer, and the critical reader will note that even in that case the symptoms had been present for a relatively short period. Records of cases of long-standing peptic ulcer terminating after years in malignant disease are exceedingly rare. In our view gastric ulcer has not yet been proved to be an important precursor of cancer of the stomach. But while it would be too optimistic to assume that the successful treatment of gastric ulcers throughout the country would have an important effect on diminishing the incidence of malignant disease of the stomach, there is nowadays no excuse for leaving an unhealed ulcer untreated, especially since medical treatment is proving such an effective weapon. Dr. HURST himself admits that there is very little danger of malignant degeneration of a healed scar, and points out that in Prof. STEWART'S series of specially studied operation cases there was only one example of cicatrix cancer compared with 11 of ulcer cancer. It is possible that the ætiological connexion between gastric ulcer and gastric cancer will remain for ever unsolved, since the general recognition and prompt treatment of the former lesion by modern medical or surgical means will make a chronic ulcer of long standing a clinical rarity.

[1] Gastric and Duodenal Ulcer. H. Milford, Oxford University Press. 1929. Pp. 544. 63s.

Annotations.

"Ne quid nimis."

THE OPTICAL PROPERTIES OF THE CEREBRO-SPINAL FLUID.

DURING the last 20 years the cerebro-spinal fluid has provided a rich field for those who have the desire and ability to search for the hidden things in the chemistry and physics of the body. The chief value of this fluid from the point of view of research lies in the constancy of its normal chemical and physical composition, and in its comparative freedom from the proteins and protein compounds which complicate the physico-chemical examination of the blood. Since Mestrezat settled the normal chemical composition of the fluid many investigators have examined the relation of variations in this to variations in blood chemistry with fruitful results. It may even be said that the chemistry of the cerebro-spinal fluid in disease has in many ways helped us to understand the chemistry of the blood. More recently the finer methods of the physical laboratory have been applied to the cerebro-spinal fluid, partly from a pure desire for knowledge, and partly in an attempt to find new methods which will help in the diagnosis of disease. Electric properties, such as electro-conductivity and the electric charge of the proteins, have already been examined, and now the optical properties of the fluid are being investigated by modern instruments.

Two recent papers deal with the refractility of the fluid and its power of absorption of the ultra-violet end of the spectrum. Penfold and Price,[1] who have investigated the refractile properties of the fluid with the Zeiss dipping refractometer, had the results of several previous workers as a basis for their investigations. It may be said at once that their results agree closely with what had previously been found. They establish the normal refractility at 1·33510 in the adult and 1·33508 in the child, with variations of no more than six units in the fifth decimal place. Any greater variation they have found to be pathological, and to indicate some disturbance either in the chemistry of the cerebro-spinal fluid alone or more commonly in the chemistry of the blood. The chief value of their work appears to lie in the correlation which they have sought and sometimes obtained between the changes in the proportions of the chemical constituents of the cerebro-spinal fluid and the alterations in refraction. Thus in nephritis and diabetes the refractility as calculated from the chemical examination might be identical with that obtained directly by the refractometer. When this parallelism was not obtained it was considered that some chemical substance which had not been investigated in the routine examination was present in abnormal concentration, and a further examination might reveal this. In diseases of the central nervous system there was often little departure from the normal refractility, since an increase in protein might be compensated by a reduction in the chlorides or glucose. Increase of refractility was much more common than reduction, and was the rule in many diseases of the nervous system, such as cerebral and spinal tumour. On the whole, however, the refractometry of the cerebro-spinal fluid appeared to be of more clinical value in general diseases such as uræmia and diabetes than in diseases confined to the central nervous system.

The absorption of the ultra-violet end of the copper arc spectrum has been studied by Fretson Skinner,[2] who hoped to gain by this means some indication of the nature of the colloids present in the cerebro-spinal fluid. In this he was disappointed, for the absorption of ultra-violet rays appeared to have no necessary relation to the colloids in the fluid. Nor were any characteristic bands observed. He did, however, find important variations from the normal in certain diseases. Thus tabes dorsalis constantly caused an increased absorption at the ultra-violet end of the spectrum, general paralysis rather more, and tuberculous meningitis much more. Some diseases, such as disseminated sclerosis, might, however, give almost normal spectra. The number of fluids examined and the exact spectrum given by each is not stated. This method of examining the cerebro-spinal fluid is of some theoretical interest, but until the results which it gives can be correlated with changes in the constituents of the fluid it is likely to be of little practical value.

[1] Penfold, W. J., and Price, C. A. E.: Med. Jour. Australia, Sept. 28th, p. 424.

[2] Skinner, E. Fretson: Jour. Neur. and Psycho-path., 1929, x., 97.

SNAKE-BITE AND ANTIVENIN.

SNAKE-BITE does occasionally, if rarely, give rise to alarming symptoms in this country, as our correspondence columns recently testified.[1] Our only poisonous snake is the adder, but in the United States of America rattlesnakes are responsible for the majority of cases, although the number of bites by copper-heads exceeds those of any other one species. In the current *Bulletin* of the Antivenin Institute of America, R. H. Hutchison has collected 607 case reports of snake-bite for the year 1928, and found that the species of snake could be identified with a fair degree of accuracy in three-quarters of them. From April until July the risk of snake-bite increases steadily, but it begins to decline again in the middle of September, and has practically ceased to exist by the middle of October. The greatest danger seems to lie in picking up or reaching for something on the ground, because any movement towards an unseen snake will elicit a lightning-like defensive bite. The symptoms vary considerably, but in most cases swelling and pain appeared early, and were the outstanding features. If the bitten part did not hurt and swell, the snake was either non-poisonous or its injection apparatus was not working properly. Other symptoms noticed were weakness, giddiness, hæmorrhage, difficulty in breathing, nausea and vomiting, as well as a host of occasional disturbances. The reports include almost every conceivable method of treatment, from the application of a freshly killed chicken to cauterisation, and specific treatment with antivenin. From this abundance of recommendations three first-aid methods have emerged as having real value. The first is the application of a tourniquet above the bite, drawn tightly enough to obstruct venous return. It should be released every quarter of an hour for at least two minutes to re-establish the circulation, its purpose being only to diminish the rate at which the venom enters the general circulation. The second measure is a crucial incision over the bite, deep enough to allow the escape of serum, and the third is mechanical suction to withdraw free venom. Experiments on dogs have shown that the common applications, such as potassium permanganate, kerosene or turpentine, are useless. Potassium permanganate oxidises and destroys the venom outside the body, but in the poisoned wound its local destructive action does more harm than can be balanced by the possible destruction of some unabsorbed venom. A review on the fatal cases emphasises the importance of early treatment under competent medical direction. In half the cases which eventually died there was delay of more than two hours before the first dose of antivenin was given. Antivenin gives prompt relief, and as long as the patient is alive there is a chance that it will counteract the poison. The Institute recommends as first-aid measures, the application of a tourniquet a few inches above the bite and an immediate subcutaneous injection of antivenin, supplemented by incision and suction if the bite has been inflicted by a large snake and if the symptoms are severe and develop rapidly. The victim is advised not to run or get hot, and to avoid

[1] THE LANCET, Oct. 5th, p. 744, and Oct. 19th, p. 850.

alcohol and cauterisation. The antivenin injection should be repeated every half hour unless and until symptoms are markedly reduced, and intramuscular injection is better than subcutaneous; while for cases not seen until some time after the bite intravenous or, for small children, intraperitoneal injection is recommended. Caffeine, strychnine, and intravenous saline should be available where there is much shock.

The Walter and Eliza Hall Institute of Research in Melbourne is devoting a special grant from the Commonwealth department of health to researches on the Australian snake venoms. Venom is being collected from a large number of snakes by making them bite through a fine piece of rubber stretched across a medicine glass. The death-rates from the common snakes in Australia are 50 per cent. from the death-adder, 40 per cent. from the tiger snake, and 9 per cent. from the brown snake. Dr. K. D. Fairley has studied the results of intravenous injections of venom in sheep, and has found that the clotting-time of the blood is increased but that no intravascular clotting was caused. He has also studied the dentition and bite mechanism of the venomous snakes, and places the death-adder first and the brown snake last. In another paper he shows that a snake which has recently struck may still be dangerous, for even after biting several times it may still have an appreciable amount of venom left in the gland. His experiments suggest that tiger-snake venom, after the natural bite, is absorbed into the circulation in less than two minutes, so that if ligature and incision are to be effective they must be applied within this time. The value of this method depends on a thermolabile constituent of the venom, for if the thrombase in the venom was destroyed by heating to 75° C., ligature only delayed and did not prevent death. On the whole, therefore, he does not think that ligature is of very much use except to delay absorption, while the excision is being carried out. Dr. C. H. Kellaway, director of the Institute, has described a new phenomenon in the action of the snake venoms on isolated smooth muscle. The reaction closely resembles the anaphylactic reaction; the muscles can easily be desensitised, and one venom will sensitise to others. The action of the venom appears to be on the muscle itself, and not on the end plate, and the desensitisation is permanent.

IRRADIATED MILK.

STANDARDISATION in the vitamin content of foods has made an important step forward. On p. 1090 of our present issue Miss K. H. Coward, D.Sc., makes a comparison between irradiated cow's milk, and cod-liver oil as sources of vitamin D, and she is able to do this accurately by comparing both with a standard solution of irradiated ergosterol. She takes as her standard the antirachitic power of one ten-thousandth of a milligramme (0·0001 mg.) of irradiated ergosterol and calls this one antirachitic unit. Though this unit is not as yet universally adopted, its use is certainly an important step in the right direction. Dr. Coward was able to demonstrate that the antirachitic value of the milk was very materially augmented by a brief period of irradiation—30 seconds approximately. Before irradiation the milk only possessed about one twenty-fifth of an antirachitic unit per gramme; after irradiation the value was enhanced to one-fifth of a unit, and in some cases, differently irradiated, to two units per gramme. Thus a child receiving a litre of milk daily would get the equivalent of 0·004 mg. of irradiated ergosterol in the non-irradiated milk, while in the best irradiated milk the equivalent would be 0·2 mg. The former amount would probably be insignificant, but the latter might be adequate prophylactically, though probably not curatively for an infant. The usual curative dose for an infant is from 1 to 2 mg. Dr. Coward lays emphasis on the marked deficiency in antirachitic potency of ordinary milk which has not been irradiated. On Oct. 5th we published a paper by Dr. Chalmers Watson and others in which some remarkably successful cures of rickets with irradiated milk were recorded. The amount of milk given was not very large, and for some reason it seems to have been effective in one case in which the specific antirachitic agent, irradiated ergosterol, is stated to have failed. On the other hand, H. Hentschel and A. Roszkowski[1] express themselves strongly against the use of irradiated milk in the treatment of florid rickets, as compared with the use of irradiated ergosterol. If it could be ensured that irradiated milk, at no enhanced cost, would reach children who are not touched by any other form of antirachitic prophylaxis, it might have a considerable value; but otherwise it seems undesirable that its use should replace that of irradiated ergosterol, which is specific in the treatment of rickets.

PATHOGENESIS OF CONGENITAL SYPHILIS.

THE poverty of the material at the disposal of the clinician and more especially the clinical teacher of to-day, as compared with that to which he had access at the beginning of the century, has been remarked upon by physicians when occasion has led them to retrospect of their own experience. Sir Humphry Rolleston, in a remarkable address to the Medical Society of London on changes in the clinical aspects of disease, drew attention to the increased rarity of certain morbid conditions, due in some cases to the effects of treatment and in others to variations in the virulence of infective agents. Dr. F. J. Poynton, in his presidential address to a section of the Royal Society of Medicine in the present year, reminded his hearers of the kind of material that presented itself to pædiatrists of the time of Cheadle—material which at any rate in civilised countries will never be seen again. Since it may well be said that the greatest advances in preventive and curative medicine have been made in connexion with diseases of the young, it is likely that in these disorders especially the material furnished by the past was superior to that of to-day. This fact does not apply to the clinician alone, but exerts a considerable effect on the activities of the pathologist, almost always with the result that he is driven to employ more indirect methods of investigation, and that the exact stages and sequences of the morbid process are more difficult to determine. No more striking testimony to the existence of this state of affairs could be forthcoming than the recent appearance[2] of Dr. Oluf Thomsen's pathological atlas of congenital syphilis in the fœtus, a disorder which has to so great an extent been modified by antenatal supervision and specific treatment. Dr. Thomsen has reproduced in a separate volume (with a short explanatory text written in German) the illustrations taken from his comprehensive work on the subject published in Danish in 1912. He justifies this course by the statement, which no one who has seen the material will be likely to challenge, that it would hardly be possible to obtain a collection of specimens at the present date which would be in any way its equal. He has incorporated with these illustrations a review of the problems connected with the transmission of syphilis to the fœtus, and discusses the evidence which has accumulated in the years since they first appeared, giving a lucid summary of his interpretation of this evidence. In general, he has found little cause to alter the view which he formerly expressed, that the infection of the fœtus is a placental one, and that a germinal (paternal) one is a hypothesis unsupported by evidence. Dr. Thomsen puts forward as facts of great significance that it has never been shown that an ovum infected with the spirochæte is viable (*lebensfähig*), and that in all the material which he investigated he has failed to find definite histological evidence of syphilis in a fœtus less than 5 months old.

[1] Münch. med. Woch., 1929, lxxvi., 1423.

[2] Pathologisch-anatomische Veränderungen über die Congenitale Syphilis bei dem Fœtus und dem neugeborenen Kind. Copenhagen: Levin and Munksgaard; Leipzig: Georg Thieme.

He believes that this is to be explained by the fact that infection invariably takes place through the placenta, and that the latter does not become permeable to the virus until some period in the middle of pregnancy. The appearance of these admirable illustrations in a more accessible form will render available to a much larger number of readers some very important work on these questions.

ANNUAL HOLIDAYS.

A PRIVATE Members' Bill, introduced last week, proposes to grant to every employed person, after 12 months' work, a holiday of eight clear consecutive days with pay. The parliamentary debate on this Bill, which is reported in another column, makes interesting reading. No speaker objected to the principle embodied in the measure; but the opponents advanced arguments based on the claim that the cost would be prohibitive, without in any way considering the value of the increased efficiency arising from a well-earned rest. Few who have studied the results of establishing for human beings those hours and conditions of work which make for health, have any doubt that industry, efficiency, and even wealth result from their adoption. Instance after instance was quoted of trades in which this scheme is already honoured; each is to-day a successful trade. Yet the others close their minds to the idea that in this and in similar schemes for welfare lie the secret of success. The fact quoted in the debate that probably 40 per cent. of the workers in Europe to-day are under agreement of some sort to be paid while they are having their holidays will come to many as something of a revelation of the social advances being made among our immediate industrial rivals. Industrial economics always allow substantially for the replacement of machinery, and similarly should allow also for the resuscitation of the human element as a paying proposition. All Government employees, either established or unestablished, who come under the class of industrial workers now receive an annual holiday with pay. Clearly the time is due when this commendable example should be extended to the whole nation by Act, as are bank holidays. What is right and advantageous for the health and efficiency of our successful industries cannot but be good for the nation as a whole. The Bill was accorded a second reading, but no hope was held out that time will be granted for its passage through the House.

INTERNATIONAL HEALTH IN 1928.

FOR the fourth successive year the League of Nations has published an International Health Year Book, which offers valuable statistics for the comparison of sanitary organisation in 29 countries and under 35 Public Health Administrations. A large amount of thorough and important work is embodied in the volume for 1928 [1] and an effort has been made to reduce the tables given for different countries to a corresponding scheme; unfortunately, in some cases suitable figures were not available so that direct comparison between all nations represented proved impossible. The probable inclusion of Egypt in the League of Nations in the near future makes the consideration of the statistics given for this country of some political interest. Great strides have been made of late years in the organisation of the Egyptian Public Health Department, and in 1927 the whole system was coördinated by the creation of a Ministry of Public Health. It is, of course, inevitable that Egypt still lags some way behind European countries, for two reasons: in the first place public health work in that country has been of comparatively short duration—the Public Health Department was formed only in 1886—and in the second place the rising population and the limitation of territory by the fertility of the Nile Valley makes overcrowding a serious and increasing problem. Public health work in every direction meets with this problem, especially, needless to say, in the large cities. To take an example a street sweeper in Cairo may be paid only five piastres a day (one shilling), out of which he supports himself and often two wives and families. Thus a nursing (and possibly pregnant) mother with three or four young children will feed herself and them for about two piastres a day on a diet of dates, beans, and vegetable rissoles, obtained from a street-vendor whose wares are spread on the ground at the corner of a dusty street, and voraciously haunted by flies. It is not surprising, then, that the death-rate among young children remains high as compared with the rates in European countries, and that it is tending to rise. The mortality among Egyptian infants under one year of age is given as 146 per 1000 live births during 1926; in Germany for the same year it was 102, in France 77, in Denmark 85, in England and Wales 70, and in the Irish Free State 74. The conditions giving rise to this marked difference are not such as can be corrected effectively or completely by sanitary legislation, as they are partly industrial and largely due to overcrowding. Various other factors will obviously contribute to the same end; superstition and ignorance play a large part, but these will naturally have less effect as education improves. The high infant mortality is more than balanced by the high birth-rate, which has always been on the increase in Egypt except during the war years. The birth-rate per 1000 inhabitants, however, shows a slight drop in the statistics for the last two years given—43·2 in 1926 to 42·7 in 1927. Yet this figure is extremely high when compared with the following: Austria, 17·8 per 1000 inhabitants in 1927, France 19, Germany 18·4, and England and Wales 16·6 in the same year. With a rising population in a limited territory, a high mortality among infants becomes almost a necessary condition of life to the survivors. It will be interesting to see what means will be used by the Egyptian Ministry of Public Health to attack this problem; a partial and temporary relief may, of course, result from improvements in damming and irrigation. The statistics supplied by the League of Nations should be of especial value to the administrators of countries such as Egypt whose conditions of public health are below the average of all the nations. The summaries provided of measures obtaining elsewhere may not be detailed enough to show how they could be adapted to local conditions, but may at least stimulate inquiry and eventually their study may lead to a general increase in efficient public health service throughout the civilised world.

[1] Published by League of Nations Health Organisation at Geneva. London: Constable and Co. 20*s*.

THE DOCTOR AND THE MOTORIST.

THE urgent problem of how to reduce the increasing number of road accidents concerns the medical profession both as motorists and as doctors. The discussion held last Monday by the Hunterian Society, and attended by the Medico-Legal Society, clarified many important points in this aspect of State medicine. The chief heads of the subject are the desirability of tests of competency and of physical and psychological fitness for drivers; compulsory insurance; the remuneration of voluntary hospitals and private practitioners who treated casualties; drunkenness in drivers; general education; and direct legislation. The speakers all agreed that some test of physical fitness was urgently required and probably some form of psychological test as well, but recognised great difficulty in laying down a uniform syllabus and in administering it when laid down. Earl Howe, better known perhaps by his former title of Viscount Curzon, made the practical suggestion that competency tests should be voluntary and conducted by local panels who would issue graded certificates. The value of these in legislation and insurance would make them a practical necessity; moreover, the possibility of

obtaining a higher certificate would provide an essential factor in motoring education which is now lacking—the incentive to improvement. Mr. E. B. Turner and others relied on the physical test to eliminate drivers suffering from defective special senses, essential limbs, dangerous heart disease, progressive paralysis, and similar conditions which constituted a danger in themselves. There was a general consensus of opinion that a test for temperament, quickness of reaction, self-control, and other psychological qualities was as yet hardly worked out and was certainly not capable of general application, but no one doubted its desirability as an ideal. Mr. Mervyn O'Gorman, vice-chairman of the Royal Automobile Club, stated what, if it can be confirmed, is a most interesting observation, that 50 per cent. of all accidents, avoidable and unavoidable alike, happen to the same 20 per cent. of drivers. It would be well worth the trouble and expense to eradicate this destructive minority, but the process might not be popular. Compulsory insurance is repugnant to many insurance companies, but Mr Massac Buist suggested compelling drivers to insure as a condition of their licence, and then leaving the insurance companies to refuse the bad ones. It is obvious that some provision is required to protect third parties against the results of the motorist's default or failure to insure himself. Connected with this is the proposal that insurance companies should pay an adequate sum out of awarded claims to remunerate hospitals which have treated traffic casualties free, but nothing can be done in this direction without legislation. Mr. Buist complained that the public took no interest in the question at all, and if this is so, there is all the more reason for the medical profession to busy themselves with it. The burden of motor casualties presses on some hospitals with a very grievous burden, and there is little sign of a general recognition by these patients of their moral obligations. Complaints are also made by many private practitioners that victims of minor motor accidents often disappear quickly after treatment without paying for it. Lord Riddell's suggestion will appeal to many: that hospitals and practitioners should be given a right of action against these patients, with a first charge on the motor vehicle. Dr. Percy Spurgin deplored the unsatisfactory state of the law on the subject of drunkenness in charge, but hinted that in practice much fewer offenders were charged than ought to be. The chief requirements of general education were the obvious ones of learning to manage the car, slowing at cross-roads, considerateness for other drivers, and the remainder enumerated by Mr. O'Gorman. The discussion showed, therefore, a number of departments of the problem which directly concerned all medical men. The general practitioner can do an enormous amount to solve the traffic problem. He is usually, for one thing, a constant motorist in all weathers, and traffic is familiar ground to him. He sees many motorists as patients and is in a position to warn them when not to drive, and often, by way of hint and fable, to instruct them how to drive, and to draw their attention to the public problems of traffic. Finally, as the person with the greatest moral influence to-day in the country, he can spread Mr. O'Gorman's "spirit of team-work," by practice more than precept.

ETHICS OF DENTAL PRACTICE.

AT the opening of the seventeenth session of the Dental Board of the United Kingdom, the chairman, Sir Francis Dyke Acland, had little of a formal character to report, but struck out a new line by informing the Board of a few of the matters which had arisen in the course of its ordinary business since its last meeting. A number of these dealt with aspects of dental practice interesting from an ethical point of view. A hairdresser had offered to scale his customers' teeth. The chairman felt so convinced that the scaling of teeth came within the words of the Act, "such treatment as is ordinarily given by dentists' (which is prohibited by persons not on the Medical or Dentists' Registers), that he directed the Board to prosecute. Practitioners had inquired whether they might pay the editors of local directories for putting in their qualifications. The chairman advised that it would be in the interest of persons consulting a directory that the qualification in respect of which a practitioner is registered should be inserted free, but that editors might reasonably make a small charge for adding his telephone number. A practitioner had inquired whether he might write to firms offering to set up a clinic for treating their employees. The chairman replied that he found it difficult to distinguish between what was proposed and offering householders to treat their servants or the members of their families, and that, therefore, he had much better not. The Hearts of Oak Benefit Society had made an arrangement with the Public Dental Service Association under which their non-State insured members should be treated at the scale of fees applicable to health insurance patients—the Society issuing to its members a letter containing the words, "It is open to you to present the enclosed letter to your dentist," and a form containing the words, "To the dentist selected by the member." As, in fact, the arrangement only applied if the dentist selected was a member of the Association, the chairman said that the arrangement was unsatisfactory and might easily involve an element of canvassing. The position was being reconsidered. In the last example which he gave, the Board heard that the London Coöperative Society had been asking for a commission from dentists treating their members on the fees which the members had been paying direct to the dentist. The Society had justified this "under the arrangements which they have with dentists and other tradesmen," they expecting a commission "on any trade obtained through their agency." This was, said Sir Francis, an unwise letter on their part, because if dentists obtained patients through an agency there was a suspicion that they were allowing the agent to canvass for them. All the dentists were warned, with the result that the Society became disturbed. It was explained that the letter had been written by a subordinate ("I suppose," said the chairman, "it was only this subordinate who had been responsible for the commission being demanded"), and the Society took the step of informing all the dentists who treat its members that if the patient paid his fees direct, the dentist was not justified in making any allowance to the Society.

RADIUM POISONING TREATED BY A PARATHYROID EXTRACT.

IN the manufacture of luminous paints crystallised zinc sulphide is mixed with radium, mesothorium, or radiothorium. The luminescence of such paints depends on scintillation. It is due to an alpha particle which consists of a helium nucleus containing two positive charges striking the crystalline phosphorescent zinc sulphide and causing a flash. Radium poisoning among New Jersey factory girls who were engaged in painting numerals on illuminated watch dials was first described by H. S. Martland [1] in 1925. It was traced to the habit of pointing camel-hair brushes with the lips. After a latent interval of one to seven years plastic anæmia may develop, and, preceding or following this, severe necrosis of the mandible or maxilla has been reported. "Radiation osteitis" of the femora, spine, and humeri have also been seen in these cases and it was followed by osteosarcoma in 2 cases out of 15. Chemists exposed to the manufacture of the radio-active constituents of luminous paints have met the same fate. C. K. Drinker, in 1925, suggested that the radio-active substances were stored in the bones of the victims, and ultimately, by testing the organs at autopsy by means of the α-electroscope, amounts up to 180 micro-grammes were found in bone, chiefly in the

[1] See THE LANCET, 1928, ii., 612, 635.

cortex. This discovery supplies the explanation of the bone changes and of the fatal aplasia of the marrow, for 95 per cent. of the rays coming from the bone are alpha rays, which are 10,000 times more destructive of human tissues than gamma rays. The treatment of the condition is, of course, preventive and we have never heard of any cases in Europe where the workers in this trade do not point their brushes with the lips. Removal from exposure, hygiene of the mouth, prevention and treatment of sepsis, and treatment of the anæmia—these, naturally, have all been carried out in cases where symptoms have started. In addition it occurred to several people, including Flinn,[2] to attempt elimination of the dangerous substances from the bone.

As long ago as 1861 Gusserow analysed the tissues of rabbits poisoned by lead and found by far the highest concentration of this metal in the bones. In discussing his observation he suggested an analogy between the storage of lead and calcium in the skeleton and hinted that changes in the organism as a whole might give rise to migration of lead as well as of calcium to and from the bony deposit. J. C. Aub, L. T. Fairhall, and A. S. Minot, in 1924, confirmed these observations experimentally in cats and also in patients poisoned by lead in industry. They found that artificial acidosis produced by large doses of ammonium chloride caused very effective elimination of lead and of calcium. Donald Hunter and Aub, in 1927, used injections of parathormone (Collip's parathyroid extract) and were able still further to increase the output of lead. This principle applied by Flinn and Seidlin to three girls with radium poisoning has caused gain in weight, improvement of the general condition, and great increase of the elimination of radio-active substance in the stools and expired air.

APRIL 1st, 1930.

THE date on which poor-law hospitals and institutions will be transferred to county and borough councils is still four months distant, but if these transferred institutions are to be appropriated by the public health authority on that date there is little time to spare. Memorandum L.G.A.26, which has just been issued by the Minister of Health, asks the councils concerned to submit proposals indicating whether it is their intention when the land in question (including, of course, the buildings upon it) is transferred to them, to apply to the Minister for his approval of its appropriation for the purposes of one of the special Acts. Any application is to be accompanied by a plan showing in a distinctive colour the land and buildings proposed to be appropriated, and by a report from the medical officer of health (or other appropriate officer) describing the present and proposed arrangements of the land and buildings. Couched, as it is, in formal terms, the memorandum deals, nevertheless, with the beginning of a revolution in public health practice. The opportunity was described by Sir Robert Bolam at the annual banquet of the Society of Medical Officers of Health, reported on page 1122, as not merely one of a lifetime, but as an opportunity unparalleled in centuries, for under the new régime the medical officer of health should, he said, be able so to alter the minds of legislators as to make the work of the medical profession at large bear fruit. At the same banquet Sir Arthur Robinson, First Secretary to the Ministry of Health, indicated the many directions in which the Local Government Act of 1929 will affect the public health service. On his right, by a curious chance, was sitting as chairman of the banquet the medical officer of health for Bradford, the only place in the United Kingdom where a general hospital is under municipal control. As a result of the changes which will begin on April 1st next, the exception is likely to become the rule, although, as Sir Arthur said, the right way to set to work is not per saltum, but gradually, quietly, and in the end surely. There may indeed be few councils which will take the drastic step of appropriating on the appointed date the institutions which are transferred to them, but, as the first circular issued by the Minister of Health to local authorities indicated,[1] they are made responsible on that date, severally or jointly, for the provision, maintenance, and management of all public institutions for the cure or mitigation of physical or mental disease. All Fools' Day, 1930, will tax to the utmost the wisdom of the wisest administrator.

[2] Flinn, F. B., and Seidlin, S. M.: Parathormone in the Treatment of Radium Poisoning. Bull. Johns Hopkins Hosp., Nov. 1929, p. 269.

CHARLES HOSE.

BY the death of Charles Hose the scientific world has lost a valuable worker in many directions, for although the centre of his activities was always the province of Sarawak the knowledge of natural history which he acquired there and on many expeditions passed into general knowledge through his writings. He entered the services of the second Rajah Brooke at a time when much of Sarawak was unexplored; neither animal nor vegetable, nor indeed human, life was understood, and Hose leapt at the opportunity of research along many and differing lines. He became a mining expert, and his oil discoveries added greatly to the wealth of Sarawak, while his anthropological studies are recorded in the "Pagan Tribes of Borneo," a work written in collaboration with Dr. William McDougall. His personal knowledge of leading tribesmen enabled him to construct maps of hitherto unexplored territory. Hose, who was made an honorary Fellow of Jesus College, Cambridge, in 1926, having previously received the D.Sc. from his University, gave his ethnological collections partly to the University and partly to the museum of the Royal College of Surgeons of England.

THE fifteenth annual report of the General Board of Control for Scotland (H.M. Stationery Office. 2*s*.) includes, besides details of the present condition of establishments for mental patients, some pertinent general remarks on the provision made for care and treatment of patients in asylums. According to the Scottish commissioners it has long been demonstrated that only a negligible number of the mentally affected cannot be treated under the same conditions as obtain in general hospitals. The desiderata of the ideal mental hospital, therefore, are full facilities for diagnosis and treatment; it should have well-equipped laboratories and a modern X ray apparatus under experienced medical control, and the administration of treatment by means of electricity, water, and light should also be supervised by a doctor. A dental room and a dentist who pays regular visits is highly desirable. The commissioners distinguish Edinburgh District Asylum at Bangour Village by citing it as an ideal hospital as regards provision for diagnosis and treatment, and give high praise to the new solarium being erected at the Govan District Asylum.

[1] THE LANCET, 1929, i., 841.

EXTENSION OF THE CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL.—Last week Princess Louise, Duchess of Argyll, opened a new wing of this institution. The extension, which has cost £51,000, will greatly relieve the pressure on the waiting-list.

LEICESTER ROYAL INFIRMARY.—On Nov. 13th the the Duchess of Rutland opened the reconstructed West Ward, named after the late Sir Edward Wood Ward, a former chairman of the governors. The day was chosen as being the sixty-seventh anniversary of the day upon which the ward was originally opened, and the same order of service was followed. The cost of the work, including two new operating theatres and their equipment, is £87,000.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LIII.

THE DIAGNOSIS OF ACUTE FOOD POISONING.

PART II.*—LABORATORY INVESTIGATIONS.

Wilful Poisoning.

WITH single cases of suspected food poisoning the possibility of wilful poisoning must be kept in mind. With a wide range of possible poisons it is impossible to discuss either symptoms or post-mortem appearances; these are fully described in books on toxicology. Remains of food left unconsumed by the patient are important to secure as unobtrusively as possible, and in particular any food or drink which may have been consumed only by the sufferer. If vomiting has occurred it is particularly important to secure samples either in bulk or on any linen on which it has been voided. Samples of urine are occasionally useful. In *post-mortem* examinations chief importance attaches to the stomach and this should always be ligatured off carefully with its contents and preserved for examination. Pieces of the small intestine should also be ligatured and preserved as well as the kidneys and liver. Other internal organs are less useful. It is essential to place the organs in jars which can be securely stoppered and *sealed* to prevent the possibility of tampering.

Local Inquiries by the Physician.

We must distinguish between the preliminary inquiries of the physician in charge of the cases and the more detailed and searching investigations possible to the medical officer of health with his facilities as regards right of entry and inquiry, and with the help he can call upon from the staff at his disposal. All outbreaks should be notified to the medical officer of health and his coöperation requested. Promptitude is however of moment and the physician in charge should make certain preliminary inquiries.

It is important, while the facts are fresh and defensive attitudes have not had time to develop, to make very careful inquiries about the food eaten by the sufferers. If there are a number of cases all subsequent to and seemingly related to a particular meal attention should be concentrated upon the exact constituents of that meal, the components eaten by *all* the persons who partook of it (sufferers and unaffected) with some general idea as to the amounts consumed. Frequently this preliminary inquiry will indicate with reasonable certitude the food at fault and elicit the fact that the sufferers were entirely confined to those who ate it.

Special efforts should be made to obtain some of this food, *as actually supplied*, for laboratory examination. This needs more personal trouble than is often given. It is not sufficient to merely ask for some of the food to be supplied. Many investigations have been handicapped by the fact that the food supplied for examination has not been the food as supplied but unconsumed, but has vaguely been part of the same food. It must be emphasised that only local or special portions may be infected and the rest of the food be quite sound. The fault may rest with meat gravy infected after preparation and standing, the meat from which it was made being perfectly good, and yet the meat alone is sampled. In some canned food outbreaks the writer has found that no steps have been taken to collect unconsumed scraps from the opened tin but that another tin of the same batch has been sent to the laboratory.

It is important to make a careful note of the physical conditions of the food before it is stale and decomposition changes may have started. The value of this examination is mainly on its negative side, since these cases often reach the courts and the physical condition of the food is an important point for the defendant. It is perhaps useful to point out that in the vast majority of food poisoning outbreaks (excluding botulism) the incriminated food is not noticeably altered in either appearance, taste, or smell when examined before secondary changes have developed. In botulism the food usually has a peculiar odour and taste, but sometimes appears unaltered. It is useful to note whether any domestic pets have eaten the infected food and have been ill.

After the presumptive food vehicle has been ascertained very detailed inquiries as to the source of infection are necessary. These are, however, very specialised, and for them the help of the medical officer of health should be invoked. They involve a careful study of the precise methods of preparation of the food, the conditions of storage after preparation, cleanliness conditions, the tracing and investigating of the original sources of the food, and the consideration of the possibilities of contamination from rats, mice, or other sources.

Laboratory Aids.

The laboratory is of undoubted value in the elucidation of food poisoning outbreaks, but there is a tendency on the part of the practitioner to attempt to throw all the onus of proof upon the pathologist. The intelligent coöperation of the clinician is necessary if satisfactory results there are to be obtained. The following three points are essential.

1. *Complete information must be supplied to the pathologist.*—In the first place, it is the bacteriologist, not the chemist, whose assistance s required, unless a definite chemical cause is suspected. It will be clear from the first article that the possible causes are very numerous. The practitioner must realise that the lines of investigation are essentially different for the different varieties of food poisoning. For living Salmonella bacilli the use of particular media is indicated, with serological tests; botulism requires a totally different bacteriological technique, chemical poisoning naturally requires a chemical examination, while to demonstrate Salmonella toxins in the absence of living bacilli is extremely difficult, often impossible. Unless the pathologist is fully informed by the clinician of all the facts he may lose valuable time and use up unrenewable food material upon investigations along the wrong lines. It will have been noted from the first part of this article how helpful is information about the symptoms, and how particularly useful are data concerning the incubation period. The different types of food poisoning all have different incubation periods.

2. *The right material must be submitted.*—Four classes of material throw light upon the causation—i.e.,

(*a*) *Any portions of the supposed peccant food.*—These must be actual portions remaining over (even scraps) from the food supplied which caused the illness. Frequently none is available.

(*b*) *Post-mortem materials from fatal cases.*—The spleen, pieces of liver, pieces of the small intestine, pieces of large intestine, and kidney are the most useful. To make a post-mortem examination and fail to submit the organs to bacteriological examination is for the most part a waste of time. When available this is both the easiest and the most reliable material on which to base a diagnosis as to the cause of infection.

(*c*) *Voided material from the cases.*—Specimens of fæces, and sometimes vomit, from the sufferers while in the acute stage, may give positive results, but are less useful than the other groups of material. In suspected chemical poisoning vomit material is particularly valuable.

(*d*) *Samples of blood for serological examination from the sufferers.*—One great advantage is that there is no urgency about these samples, since any serological reactions persist for many weeks, while in any case they will not develop until a week or more after the onset. The collection of these specimens, therefore, is better left over until the other samples have been sent and their examination started, which will enable the bacteriologist to indicate exactly

* Part I., on Causation and Clinical Problems, appeared last week.

what he requires. Classes (*a*) (*b*) and (*c*) must be sent without delay.

3. *The material must be submitted properly.*—The directions of the writer, which have been adopted by the Ministry of Health, are as follows:—

Specimens of excreta may be sent in clean wide-mouth bottles. The food may be put in a clean tobacco tin. The organs from fatal cases should each be wrapped in a piece of clean cloth, wetted and wrung out (only damp, therefore) with 30 per cent. glycerin solution. All the organs may be placed so wrapped in one large tobacco or other tin. If possible, the samples should be sent packed in ice. An impromptu ice-box can be made by using a fairly large biscuit tin, and packing the tins and bottles in one side of this, and filling the other part with dry ice in small pieces. The tins and bottles must be secured from rolling about when the ice melts by means of cloths and wood partition, or other device. The biscuit box should be packed in a wood box with at least two inches everywhere of sawdust between the two boxes. If ice is not procurable the samples must be sent without it rather than be delayed.

The Interpretation of the Pathological and Chemical Data.

In cases of chemical poisoning the actual chemical agent responsible may be ascertained and an estimate arrived at as to dosage.

The analyst will supply information on the amounts present. A careful calculation is then necessary to ascertain whether this could represent a poisonous dose. Mere detection of a chemical poison does not necessarily imply that it was responsible. For example, in a case of botulism from canned fruit small quantities of tin may be found and be of no significance.

In *botulism* the pathologist may or may not be able to isolate *B. botulinus*, but he can often demonstrate, by animal experiments, the presence of botulinus toxin and ascertain the type of this bacillus responsible.

In *Salmonella poisoning*, if living bacilli are present, they can usually be isolated from the food, if any of it is available. They are never present in sound food. Fæces examinations, if collected during the acute stage or soon after, usually enable the bacillus to be isolated, but these bacilli tend to disappear fairly rapidly, and samples collected a week or so after recovery are often negative. In paratyphoid fever cultural blood examinations are often positive, but it is extremely rare for these to be successful in Salmonella food poisoning, and they are not worth doing.

With food poisoning from Salmonella toxins the laboratory report may be quite negative, since it is often impossible to demonstrate their presence in a particular outbreak; this is, however, possible in some cases by special procedures. The diagnosis is then only a probable one based upon the whole of the facts of the outbreak.

In fatal cases the internal organs almost invariably yield the bacilli in outbreaks due to living Salmonella bacilli, and diagnosis in these cases is usually a simple matter.

Serological tests.—In many outbreaks no food is available, there are no fatal cases, and fæces samples are either unobtainable or obtained late and negative. In such cases the serological tests may furnish the only bacteriological clue. Inquiries have to be made as to the possibility of previous protective inoculations against typhoid and paratyphoid fevers, but apart from this it is rare for sera to give a positive reaction in any moderate dilution with any of the Salmonella strains. A positive reaction in a dilution of 1 : 50 or higher is therefore of great diagnostic value, and may be conclusive. While only a little blood, which can be withdrawn from the finger or ear in the ordinary way, is required, it should be more than the one or two drops which is often sent. It is quite easy to collect an adequate 0·5 c.cm. from the finger.

Fallacies.—There are a few fallacies to keep in mind as regards laboratory reports. If the food is of a meat type and is not submitted fresh the bacteriologist will find many bacteria and invariably *B. proteus*, because this organism is always present, in the writer's experience, in meat allowed to begin to decompose. The pathologist returns this in his report as present, but as such it means nothing. The presence of other strains such as *B. coli*, streptococci, &c., also cannot have significance under such conditions.

Conclusion.

In many mild outbreaks, from one cause or another, the bacteriologist's findings will be negative and the cause of the outbreak will remain obscure. These negative findings will decrease when fresher and better material is submitted and when our present knowledge as to causation is extended.

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Special Articles.

RECENT WORK ON THE HORMONES OF THE OVARY.

OVULATION IN HUMAN BEINGS.

IT is not too much to say that nearly all the work on ovarian hormones during recent years is founded on the discovery of the cyclical changes in the vaginal epithelium which accompany the sexual cycle in small mammals. Stockard and Papanicolaou[1] first noted them in the guinea-pig in 1917, and the observation was later found to apply to the rat and mouse.

The implication of this purely biological investigation was grasped by Allen and Doisy,[2] who saw in this discovery the long-sought means of determining the activity of ovarian and placental extracts. Rats and mice were used for the experiments; their ovaries were removed, and smears from the vagina were examined microscopically. After oöphorectomy the sexual cycle is of course absent, and the rats remain in a permanently dioestral condition,* which corresponds with a characteristic histological appearance in the smears made from the vaginal epithelium. If an active preparation made from the ovaries or placenta is now injected into these animals, a cyclical change in the type of smear is produced, resembling that which occurs in the normal animal, and about 48–72 hours after the injection the leucocytes, accompanied by a few nucleated epithelial cells originally present in the dioestral state, have almost entirely disappeared and have given place to a cornified type of cell in which the nuclei are barely visible. These cells disappear as the time after the injection increases until finally the leucocytes and nucleated cells denoting the dioestral state are again preponderant.

Armed with this method of assay Allen and Doisy were able to consolidate much of the good work which had been done during the previous twenty years, and—what was no less valuable—were able to indicate the doubtful value of many investigations, which, in the absence of a reliable test object, had obscured the outlook and brought discredit on this branch of physiology. The result has been a tremendous development of research upon these lines in all countries. This work is mainly of two kinds: (1) the preparation of ovarian extracts of increasing purity, so that certainly less than 0·01 mg. is now necessary to produce œstrus in the rat—the ultimate object of this type of work is, of course, the isolation and chemical identification of the pure substance; (2) a study of the physiological and pharmacological properties of these extracts. Concurrently with these investigations some few early results of clinical tests have already appeared.

It may not be clear why so long an interval should have elapsed before this obviously very active sub-

* The dioestrus is an interval between two periods of sexual desire in animals.

stance should receive extensive clinical trial. The chief reason has been the nature of the early extracts, which were very crude and consisted of an insoluble oil hardly suitable for the purpose. More recently, however, the substance has been obtained by several workers independently in a water-soluble form of very high activity (Laqueur,[3] Jordan, Thayer, and Doisy[4]; Allen, Dickens, Dodds, and Howitt).[5] It still remains to be seen what will be the value of this material in medicine.

The Ovary and the Pituitary Body.

Meanwhile, research in another direction has been carried on by Zondek and Aschheim[6] in Germany and by Smith and Engle[7] in America. These authors showed independently and almost simultaneously that transplants of the anterior lobe of the pituitary body into immature female rats and mice produced very remarkable changes in the ovaries. Cornified epithelium appeared very soon in the vagina, and uterine hyperæmia, ovarian development, and the formation of large follicles or corpora lutea resulted. These effects are explained as due to the action of the anterior lobe hormone on the ovary, which is itself stimulated to produce its hormone or hormones, as in natural puberty. Ovulation may occur and many more corpora lutea than are normally found in these animals may be caused to appear. The anterior lobe hormone has no effect on animals whose ovaries have been removed.

These striking results, which are clearly of great importance, were followed by the remarkable discovery of Zondek and Aschheim that the anterior lobe hormone is excreted in the urine of women during pregnancy. The fact that the urine of pregnant women, and almost none other, when injected directly into immature mice, produces changes similar to those described above in the ovaries and uterus, has been made the basis of a biological test for pregnancy by Zondek and Aschheim, as has already been described in these columns.[8]

This work of the German and American investigators has clearly shown the relation long suspected to exist between the ovary and pituitary body. But there is probably more than one active principle contained in the anterior lobe of the latter gland, as is shown by the pioneer work of Evans and Long[9] in which they produced giant rats by injection of very concentrated extracts of ox pituitaries. Besides the growth-promoting principle we have also the hormone or hormones responsible for luteinising or ovulation, follicle-ripening, and also the production of local hyperæmia and the consequent formation of corpora hæmorrhagica, such as are obtained in rats by the injection of the urine of pregnant women. These last are so characteristic of the injection of urine—whilst gland transplants produce mainly follicular growth followed by ovulation and the formation of corpora lutea—that Engle[10] has recently questioned whether the derivation of the active principle in the urine of pregnancy from the anterior pituitary is really proved. This will evidently be difficult to settle with certainty, but on the information at present available it seems probable that Zondek's assumption is justified.

Fluhmann[11] has lately reported that bilateral oöphorectomy led to the appearance of anterior lobe hormone in the blood of 12 out of 19 women studied. The time which elapsed between operation and the test varied from 8 days to 13 years in the different cases. In several cases of sterilisation by irradiation, and in some cases of functional amenorrhœa, the reaction was also found to be positive. The same method as that employed by Zondek and Aschheim was used, except that the patient's blood-serum and not urine was injected. This work suggests that possibly further valuable modifications of this test of Zondek and Aschheim may be forthcoming, and that these may find useful diagnostic applications. Much more study of these important matters is necessary, and the increasing literature on the subject shows that it is already in progress.

The Time of Ovulation in the Menstrual Cycle.

Of a somewhat different nature, but equally remarkable, is the recent work of Knaus[12] from Prof. E. Knauer's clinic at Graz. In this case also the starting-point is from some purely biological researches, this time due to Hammond working with the rabbit.[13] As is well known, in the rabbit coitus is regularly followed by ovulation at a known interval of time. It is thus possible to bring about ovulation at any time in this animal, and it has been found that the presence of the corpus luteum is accompanied by the development of a considerable insensitiveness of the rabbit's uterus to the action of pituitrin. This change is recorded in vivo by filling the uterus with fluid and recording the uteric pressure as a kymographic tracing. The injection of pituitrin into an animal which has not ovulated produces an immediate contraction which is not obtained in the same animal after ovulation.

Knaus has used this new biological reaction in an attempt to solve the vexed question of the exact time of ovulation in the human female, and the result of his test is remarkable. He claims that it is possible to say with certainty that a normal woman with a regular four-weekly cycle cannot conceive during the first ten days or after the 18th day of the menstrual cycle—that there is, in fact, a physiological sterility during this period. This conclusion is contrary to what has been fairly generally accepted for many years, but such observations at least show the immense practical importance of studying the internal secretions of the ovary.

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VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Pathological Research in Vienna.

Prof. Jarisch, who at present is the chief of the Pharmaco-Experimental Institute of the University of Innsbruck (Tyrol), is shortly to be appointed as successor of the late Prof. Paltauf, who was director of the Vienna Institute for General and Experimental Pathology. With the new director a new departure in the work of the institute is anticipated. Prof. Paltauf favoured research into morbid anatomy, whilst Jarisch will turn his attention more to pathological physiology and to biochemistry. Some time ago efforts were made to convert the existing pathological institute into an institute for experimental therapeutics, on the model of Ehrlich's Institute in Frankfort, but the plan had to be abandoned.

A new institute for cancer research is, however, shortly to be opened in Vienna. The necessary funds have been contributed by a generous grant by Mr. Childs, an American philanthropist, who sought and found cure from a serious malady in this city. The cancer institute will be directed by Dr. Edelmann, who has converted for this purpose a private nursing home and equipped it as a centre for experimental therapeutic research. It will be organised in connexion with the Federal Serotherapeutic Institute,

and Prof. Jarisch and Dr. Pick, professor of pharmacology, and Dr. Edelmann will coöperate in the systematic study of cancer, and, it is hoped, will attract many foreign students to work out their problems in Vienna.

The Decreasing Birth-rate in Vienna.

The official report just published of the Austrian Board of Health for 1928 shows that the population of the Republic was 6,536,892 persons on Dec. 31st of that year. The number of living births amounted to 115,014; of deaths, 96,321. This means a slight increase of population for the whole Republic, but not for its capital. In Vienna the statistics show a surplus of 6411 deaths over births. In the current year the loss will be still greater since the first six months of 1929 show an excess of deaths over births, amounting to 5631. Vienna had, in 1914, a population of over 2,000,000, and in 1928 only of 1,862,470, and the loss is yearly more marked. The chief reason for the drop of the population figure, which is barely half what it was in 1913, is the decline of the birth-rate, for the death-rate is also constantly decreasing. One factor, the emigration from the capital to the country, plays a part which must not be neglected, but the chief reason seems to be voluntary birth restriction from economical considerations.

Trichinosis in Vienna.

At a recent meeting of the Gesellschaft der Aerzte Dr. Reitter demonstrated several cases of trichinosis which have lately been observed in this city. Eighteen cases of trichinosis in this country were reported in 1925 and 1926, and since then, according to Dr. Reitter, cases have been more frequent than is generally supposed. He recently discovered two more cases. One patient was a woman of 50, who was sent to hospital diagnosed as nephritis, because of swelling of the eyelids and face, combined with slight albuminuria. She ran a temperature of 102° F. and had intense pains in the legs, but no other symptoms. The diazo reaction was strongly positive, and eosinophilia was present. The fever disappeared after a week. An excision from the gastrocnemius muscle verified the diagnosis of trichinosis. The second patient was a woman aged 25, who came to the hospital on account of supposed sinusitis frontalis. This patient also had high fever (101·6°), a swelling of the eyelids, pains in the limbs, and a positive diazo reaction. The nose was found to be normal. After a blood count showing 17,500 leucocytes and 44 per cent. of eosinophiles, the correct diagnosis was easily reached, and verified by an excision from the gastrocnemius, where an enormous quantity of trichinellæ was visible. This patient was cured in 18 days. Dr. Reitter puts stress on the presence of eosinophilia, which is a cardinal sign. But one must look for other symptoms more easily detected by the general practitioner: pyrexia, with high temperature, œdema of the face, or at least of the eyelids, pains in the muscles, positive diazo reaction, and negative findings of other organs. Diagnosis is then easily verified by a blood count and microscopic examination of a piece of muscle. The only reliable prophylaxis against trichinosis is sufficient boiling of pork. In the discussion following Dr. Reitter's demonstration Dr. Weinberger emphasised the necessity of compulsory notification of trichinosis by veterinary inspectors, so that the sale of infected meat is made impossible. The centralisation of slaughtering in district slaughter-houses with inspection of the meat by qualified persons is necessary, besides the control of all foreign imported meat, as is done in some parts of Germany. Dr. Decastello pointed out that small outbreaks are certainly frequent, but pass unrecognised as "nephritis" or "rheumatism." He had observed that a swelling of the spleen is generally not noticeable, but the patellar reflexes are often absent (owing to injury to the muscles). The therapeutic measures consist in injections of salvarsan, trypaflavine, urotropine, but are not reliable. Some cases prove fatal from myocarditis or thrombo-arteritis.

Diffusion Anæsthesia of the Peritoneal Cavity.

Dr. Mandel, of the clinic of Prof. Hochenegg, has used lately a new method to anæsthetise the abdominal region, which he calls diffusion anæsthesia. Under local anæsthesia he opens the abdominal wall, inserts a drain, and pours into the peritoneal cavity 250–350 cubic centimetres of a ¼ per cent. to ½ per cent. solution of percain. This substance is a derivative of quinoline, and has nothing to do with cocaine. Its anæsthetic property is very high; it is active in a solution of 1:120,000 upon the cornea of the rabbit. Its action is superficial, but it has a high degree of penetration. Dr. Mandel has operated on 30 cases in this manner. A group of six cases consisted of exploratory laparotomy with absolute anæsthesia, the operations lasting up to one hour; a second group consists of five gastro-enterostomies with complete anæsthesia. No pain was felt even when the organs had to be handled and pulled. A third group comprises 15 gastrectomies. In three cases the method was a failure, perhaps owing to the fact that the solution used was old, not freshly made; the others were quite satisfactory. A fourth group is formed by four appendicectomies, and also showed very good results. Dr. Mandel uses pantopon before operation and adds adrenalin to the percain. No complication was noted, but further observations are necessary to decide the indication for this method.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Tuffier and the Chair of Surgery.

YOUR account of Théodore Tuffier (p. 993) does no more than justice to one who, as you say, upheld a great surgical tradition. Surprise has been expressed that he was never granted the full professoriate by the Paris Faculté, although he became agrégé in 1889, when he was but 32 years old. This appears the more remarkable, as in France at least great importance is attached to the status of professor, which is the key to most forms of hospital practice, as well as to the recruiting of assistants and pupils. The omission was due to personal and not professional considerations. Tuffier, however, had no need of official status; for many years his surgical service attracted every foreign surgeon passing through Paris, and his pupils are scattered all over the earth. He was a marvellous teacher, able to set out the hardest subject in clear language which impressed itself on the memory. As a surgeon he was rapid and skilful, often changing his methods, for he had no use for routine; each case was dealt with according to the findings of the moment. He was always ahead of his colleagues in trying every new operation, and stamping it with his own personality. You have spoken of his pioneer work in rachianæsthesia, but he was for some time the only surgeon in Paris to practice blood-transfusion by direct anastomosis of the radial artery of the donor to the saphenous vein of the recipient. It was, in fact, with some tremor that his assistants watched this operation, for once the anastomosis was performed, no one knew how much blood was passing, and whilst the recovery of the recipient might be dramatic, the operation had to be hurriedly stopped owing to the fainting of the donor. This was the way in which one of the most beneficent of therapeutic measures arose, and Tuffier's work was the prelude to the quick and simple process of present-day transfusion. In the social life of Paris, Tuffier took a high place. His judgment was always sound, and if adverse was couched in such a way as to appear almost indulgent. He was, besides, a great traveller.

Death of Prof. Lecène.

A second blow to surgery is the loss of Paul Lecène, who has died at the age of 51, as the result of typhoid fever contracted by operating on a case of cholecystitis. He passed rapidly through the earlier stages of

a surgical career, and was made professor of clinical surgery in 1921. He was a man of wide culture, reading Greek as if it was his native language, and being one of the first authorities on morbid histology. He kept himself fit by outdoor sport, and was a practised boxer. His vast knowledge and robust character made him a formidable adversary at scientific meetings, but those who suffered at his hands had to admit his fairness and honesty of purpose. Several of his books on surgical morbid anatomy will rank as classics.

Euthanasia and Morphia.

A recent acquittal on a murder charge has revived interest in what is known as euthanasia, although it may be stretching a point to apply the term to the process of exterminating a suffering patient with several bullets from a revolver held in a hand rendered clumsy by emotion. The medical man has only to recall the tremor with which he applied the knife for the first time to the live skin of one of his fellows. Nevertheless, most doctors in this country would have voted as the jury did in the case of Richard Corbett, indicted for accelerating the death of his mother, who was suffering from a generalised cancer. A similar verdict has been given three times in the last five years. Euthanasia has been widely discussed here, and whatever may be its philosophy, it is a fact that the whole medical corps is opposed to its introduction into the law. One point made in court during the Corbett trial does not seem to have received the emphasis it deserves. Mrs. Corbett, although her suffering had been such as to bring a spectator of it to the verge of desperation, had been given no morphia. I do not know the reason for this in her case, but I do know intimately of a case in which a patient to whom the help of morphia was refused was killed by his wife, who was horrified at his suffering. It must be kept in mind that since the law on pharmacy, instituting what is called "*Tableau B*," came into force in 1916, chemists and physicians alike live in terror of morphia. Honourable practitioners have been brought before the magistrate for giving to agonised patients with cancer doses of morphia considered too high by an inspector of pharmacies. Some chemists actually prefer not to stock morphia at all, in order to avoid the annoyance of inspection. The law of 1916, which was framed with the laudable object of saving from the asylum a handful of wretched addicts, has set the terror of prosecution amongst physicians, and has condemned to helpless suffering thousands of patients who might have been relieved of it.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Civic Guard and the Protection of Children.

SPEAKING last week at the annual meeting of the Society for the Prevention of Cruelty to Children, General Eoin O'Duffy, Chief Commissioner of the Civic Guard of the Irish Free State, gave interesting information about the work done by the Civic Guard in carrying out the Acts for the protection of children. He drew attention to the frequency of infanticide in recent years, the number of cases reported in the five years 1924–28 being 86, with 56 prosecutions. He was not satisfied that the punishment of those guilty of infanticide was sufficient. It was sometimes difficult to get juries to appreciate the seriousness of the crime. The murder of infants was not placed on the same level as the murder of adults. During the same five years there had been 896 prosecutions under the Children's Act, and in the year 1928 there had been 11,042 prosecutions under the School Attendance Act. In many counties there had been no attempt to carry out the inspection of boarded-out children.

The Medical Society of University College, Dublin.

At the opening meeting for the session of the Medical Society of University College, Dublin, the president, Dr. D. J. Cannon, read an interesting address on the Relationships of Gynæcology to Endocrinology and to Other Branches of Medicine. He gave a clear account of recent researches on the mechanism of the menstrual function, and showed that there was reason to believe that not only the ovary, but also the thyroid and the pituitary were active in the stimulation or control of menstruation. He also discussed the relations of gynæcology to abdominal surgery and to psycho-analysis. The paper was discussed by Prof. R. J. Rowlette, Senator H. L. Barnaville, Prof. M. R. J. Hayes, Dr. D. G. Madill, and President D. J. Coffey, who occupied the chair.

Presidency of the Royal College of Surgeons in Ireland.

At a meeting of the Royal College of Surgeons in Ireland, held on Nov. 15th, Prof. Andrew Fullerton, of Belfast, was elected President in room of the late Prof. T. E. Gordon, who died last July. Mr. Fullerton is the immediate past-President of the College, having been in the chair from 1926 to 1928. He will now hold office until the annual election of the officers next June.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1928 statistics of two inland and three seaport towns :—

Name of town and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Leeds .. .. (476,500)*	16·1	12·9	1·13	1·46	2·1	2·0	79/37	31	4·6
Bradford .. (288,500)	15·3	13·6	1·00	1·52	2·6	1·6	69/34	25	5·4
Portsmouth .. (240,700)	17·2	11·3	0·95	1·34	1·4	2·2	55/23	26	5·4
Cardiff .. .. (227,000)	17·9	11·7	1·21	1·14	1·9	1·8	77/32	30	5·8
Birkenhead .. (159,200)*	18·5	12·3	1·23	1·48	2·2	1·9	80/34	40	5·5

* In both these cases the boundaries were extended on April 1st, 1928, and the Registrar-General gives a population for statistical purposes—viz., 474,800 for Leeds and 157,900 for Birkenhead.

The proportions of notified stillbirths to live births were: Leeds, 5 per cent.; Bradford, 4·5 per cent.; Cardiff, 6·4 per cent.; Birkenhead, 5 per cent.; and Portsmouth, not given.

Leeds.

Dr. Johnstone Jervis reports that by the extension of the boundaries on April 1st the area of the city was increased by 7969¼ acres to 38,106 acres, and the population by about 5000. The hours of sunshine were 1320·5 as compared with 1177 in 1927. A table shows that in 1928 Leeds occupied ninth place, equal with Manchester, for death-rate among the 13 large English towns, the towns with higher rates being Liverpool, Bradford, and Newcastle. Deaths from vehicular traffic accidents averaged about 60 during

the past three years, as compared with about 20 in the three pre-war years. The practice of cremation gains ground very slowly in Leeds, the numbers for the last four years being 26, 14, 32, and 31, whilst the deaths in each of these years were over 6000.

Dr. Jervis hopes that the unification of the public medical services, consequent on the Local Government Act, 1929, will include the school medical service. There were 53 cases of small-pox without a death. Scarlet fever was extremely prevalent in the second half of the year. The cases notified, 3515, were more than in any previous year. The type was mild, and the deaths numbered 18. Dr. Jervis mentions that parents are slow to avail themselves of the facilities provided for the immunisation of young children against diphtheria. The need for complete immunisation of the staff of the isolation hospital is shown by the fact that 17 of the staff developed scarlet fever and 6 diphtheria. A marked increase of new cases of syphilis and gonorrhœa at the V.D. clinic is noted, succeeding the fall, which took place in Leeds in 1921–23. Dr. Jervis recommends that a trial be given to a scheme for boarding-out the child contacts of "open" cases of tuberculosis in a healthy environment. The "factory-in-the-field," for giving employment to consumptives in firewood-making, brush-making, and printing, is being continued. At the end of 1928 there were 35 tuberculous and 13 non-tuberculous employees. A striking example is given of the danger of tuberculosis being spread among clerks in an office. A junior typist was notified in March, 1927. In October, 1928, another junior clerk was diagnosed. The infecting case was a senior clerk with advanced disease, who was only referred to the dispensary in March, 1928. Artificial light treatment is found to be "of definite value" in tuberculous adenitis, bone and joint disease, and abdominal tuberculosis. Light treatment is also in use at two infant clinics, and is claimed to give good results in rickets, malnutrition, and general debility, for which ailments it is also found useful at the Infants Hospital, Wyther (50 cots). In February an orthopædic clinic was inaugurated for children under five years. Plans are being prepared for the much-needed new hospital at Elmet Hall, which will deal with orthopædics and surgical tuberculosis.

The chief veterinary officer, Mr. J. A. Dixon, M.R.C.V.S., reports that the cow population of the city was 2136 in the first quarter, and increased by 791 when the extension took place. Under the Tuberculosis Order 23 notifications were received from owners and 3 from veterinary surgeons, whilst 39 suspected animals were discovered by routine inspection of the cattle. This confirms the experience of previous years that the Order can only be effective where there is regular routine veterinary inspection. Of the 40 cows condemned 12 had tubercle of the udder, 15 tuberculous emaciation, and 13 were "otherwise" affected. A considerable number of the cowsheds in the added areas were below the standard in sanitation. The cooling of the milk is a difficulty, as many of the farms are without an adequate supply of water. The only Certified Milk herd in the city is that at the City Council's farm, and Mr. Dixon points out "that it would be rather difficult for farmers who recruit their herds by purchase of young stock, in the open market, as do the majority of the local farmers, to secure a regular supply of non-reacting cows."

The West Riding Smoke Abatement Committee has passed a resolution asking the Ministry to urge all the gas-works in the country to produce smokeless fuel by the low temperature carbonisation of coal. Since the war Leeds corporation have built nearly 6000 houses, but the housing of the man with an income of 35*s*. to 40*s*. "has not been touched." He needs a house with an inclusive rental of 6*s*. to 7*s*., and a few municipal cottage flats are the only attempts to meet his wants. Each has a separate entrance, and they are very popular, and the demand exceeds the supply. It is intended to build more in future. Dr. Jervis also advocates the acquisition by the corporation of back-to-back houses of an intermediate type, to be let at low rentals to slum tenants, who, by being kept under supervision, "might be induced to keep themselves and their families in a fairly clean and healthy condition."

Bradford.

Dr. J. J. Buchan says there are 179 farms and 985 houses not connected to the corporation sewers. There are only 212 houses with privies, the remainder having water-closets, of which about 9 per cent. are of the "waste water" type.

Mr. W. Halstead, M.R.C.V.S., the veterinary inspector, states that there are about 3378 dairy cows stalled in the city, producing 7500 gallons of milk per day. Another 8000 gallons comes in from outside. The daily consumption of milk is given as 0·4 pints per head. As the result of regular inspection, 17 cows were found with tubercle of the udder and 15 otherwise affected with tubercle. Of 718 samples of milk examined, 39 were found to be tuberculous. In the follow-up of 15 outside tuberculous milks, 9 cows were found at nine farms with tubercle of the udder and slaughtered, whilst on six farms the source of the infection could not be traced. A milk purveyor, who failed to provide suitable storage accommodation for his milk and vessels, was convicted of selling separated milk, containing 29·7 per cent. of added water, and of neglecting to label his milk vessels with his name and address, and the words "separated milk," and was removed from the register by magistrate's order.

The Schick test is not employed in Bradford. There were 136 cases of small-pox with 4 deaths, all of old persons debilitated from other causes. It is claimed that the local powers for the compulsory notification of venereal diseases, obtained in 1925, have had a wholesome effect in causing cases to continue until recovered under treatment, either at the municipal centre or by private practitioners. In 1927 an investigation officer was appointed to follow up known cases of cancer, and, with the coöperation of the whole medical profession, it is thought that no case will be lost sight of. The follow-up of the 450 cases which came under treatment during 1928 shows how late cases of cancer come under medical observation. Of 153 cases notified by practitioners, 113 were too advanced for any but palliative treatment. Of 220 operations in hospital, a radical operation was not possible in 124, and in another 118 cases admitted to hospital no operation at all was possible. A table shows that during the last 20 years there has been a slow but quite marked decline in the neonatal death-rate, but that the mortality in the first week of life does not show quite the same improvement. Midwives attended 3157, or 74·4 per cent., of the registered births. Of these the municipal midwives attended 882. The total births were 4421. In the maternity wards of the municipal hospital there were 654 live births and 69 stillbirths, and 11 maternal deaths. The new patients, who attended the antenatal clinic of the hospital, numbered 700. The local authority conducts 11 maternity and child welfare centres, and the main effort of volunteers is to provide skilled instruction in dressmaking, sewing, knitting, cookery, and mothercraft by experienced teachers at four centres. A holiday home and convalescent fund are other features of the voluntary work.

The municipality erected 1260 houses, and at the close of the year 84 were in course of erection and 362 contracted for. There were also 247 private enterprise subsidy houses in course of erection at the end of the year. Nevertheless, many very serious cases of overcrowding come to light, and there is still a great scarcity of houses. On Dec. 31st, 1928, the applicants for new houses numbered 2126, of whom 483 were living in lodgings. The White Abbey improvement scheme is making progress; 95 per cent. of the properties have been acquired and 36 per cent. demolished. In November artificial light treat-

ment was inaugurated at the new central school clinic, and, in order that an accurate opinion may be formed as to its value, exact details of the treatment, dosage, &c., with results, are to be kept, and will be given in future reports.

Portsmouth.

Dr. A. Mearns Fraser reports that diphtheria was unusually prevalent, especially in the last quarter. The notifications were 866 and the deaths 53, a case-fatality of 6·12 per cent. A table shows that there were few fatalities from diphtheria in Portsmouth from 1861 to 1880; in 1881 and 1882 there were 205 and 106 deaths respectively; 1899 and 1900 were again peak years with 120 and 104 deaths respectively; another peak occurred during 1911 to 1915, since which the annual deaths have averaged about 40, and varied from 18 to 66.

The municipal maternity home (14 beds), which is about to be replaced by a combined maternity hospital and child welfare centre in Fratton, admitted 255 patients for their confinements, and the weekly antenatal clinic conducted at the home was attended by 780 new cases, the total births being 4445. The insurance scheme by which expectant mothers pay a premium of 5s. for provision of medical assistance if required has been in operation for two years. In the two years before the scheme the claims for medical services amounted to £1550; in the two years of the scheme's operation the claims have amounted to £2250. Dr. Fraser states that during the two years of the scheme doctors were called upon to conduct the whole confinement in 13 per cent. of the insured cases, but only in 3·3 per cent. of the uninsured. There is an increase in the maternal mortality from childbirth, accounted for by 14 deaths from puerperal sepsis.

A satisfactory feature of 1928 was the large number of new houses erected, but the housing requirements of the population have not yet been adequately met. The municipality erected 226 houses and flats. There were also 429 subsidy houses erected by private enterprise, and £32,400 was advanced under the Small Dwellings Acquisition Act, 1899, for the financing of 73 houses. A start is to be made in getting rid of some of the worst slums in the city during 1929. During the year the selection of tenants for municipal houses was placed under the health department. This entailed the classification and placing in order of urgency of over 1500 applications. Preference is to be given to large families living under unhealthy and overcrowded conditions, but unfortunately a large number of these applicants have had to be refused because they were unable to afford the rent.

Portsmouth came off well with 1923 hours of sunshine, and in this connexion the low death-rate from respiratory diseases with influenza is noteworthy.

Cardiff.

Dr. Ralph M. F. Picken's report contains many special features of interest. Records have been kept of hospital cases of cancer of the breast and uterus since Jan. 1st, 1926, and of the rectum since Jan. 1st, 1928. Of 30 cases of cancer of the breast treated in 1926, 16 were alive at the end of 1928. Of 29 cases of cancer of the uterus treated in 1926, 5 were alive at the end of 1928. In 34 of the 55 cases of cancer of the female genital organs treated by operation during 1924 to 1928, the period between discovery and operation was six months or less, and the average period between the first operation and death was 16·5 months. Dr. Picken comments that although cancer involving the uterus is eminently suitable for operative or radiological treatment in its early stage, only one-third of 167 of such cases received this treatment.

The circumstances of three outbreaks of milk-borne diphtheria, involving 31 cases with no deaths, are described by Dr. C. J. McSweeney. The first outbreak of 13 cases was associated with an unrecognised attack in the farmer's daughter, who slept in the same room with her sister, who was a carrier. The second outbreak was associated with the farmer's daughter, who was a carrier, and in this case virulent diphtheria bacilli were isolated from lesions on the udders of cows, which were diagnosed by a veterinary surgeon as cow-pox. In the third outbreak of 11 cases a carrier was found among the milk roundsmen. In view of the reports from abroad, sera submitted for the Widal reaction since October, 1928, have been tested for agglutination with *Brucella melitensis*. In November one such serum gave a positive result, and the patient in question, after consultations, was decided to be suffering from undulant fever of the *Brucella abortus* type. Since this occurrence milk samples sent to the public health laboratory for other purposes have been examined for *Brucella abortus*, and three positive samples obtained from different animals on a farm in a neighbouring county. Dr. Picken makes the deduction that milk-borne undulant fever may be more prevalent in this country than has generally been supposed. Since June, 1925, pregnant women attending the antenatal clinics have been submitted to the Wassermann test. The results up to the end of 1928 show that of 1967 such tests, 61, or 3·1 per cent., were positive. All those who give a positive result are treated at the auxiliary V.D. centre for women and children.

Cardiff has no large insanitary areas, and slum clearance is not as big a problem as in many towns. A recent investigation has revealed approximately 100 "unfit" houses. Section 3 of the Housing Act, 1925, has proved invaluable in securing the removal of dilapidations, and, when owners have proved difficult, ground landlords have readily brought pressure to bear. Water-closets without flushing cisterns have become a serious problem, to deal with which new powers may be necessary. There are approximately 14,000 such in the city.

The school report shows that of 29 children attending the oral school for the deaf, 14 were born deaf; that zinc ionisation for obstinate ear discharges continues to give good results; and that the Greenhill open-air school (accommodation about 100) and the special classes for stammerers, both recently started, are giving very encouraging results.

Birkenhead.

Dr. D. Morley Mathieson shows the need for the revision of the graded milk scheme. To the man in the street "Grade A must be the best milk, whereas it is really third in the scale." Another matter requiring attention is the compulsory keeping of registers by dealers. During the year one Birkenhead purveyor, licensed to bottle Grade A (T.T.) milk, sold other milk under this guise, and had his licence revoked. Dr. Mathieson points out that the risk of such frauds would be considerably minimised if every retailer were required to keep a register of all graded milk bought and sold. Such a register is required at present for wholesale transactions. During the year 84 samples of milk were examined for tubercle, and nine gave a positive result. This is equivalent to 10·7 per cent. to be compared with 21·0 per cent. for the 1927 samples.

An amended scheme for the welfare of the blind has been prepared by the health committee and approved by the Ministry. Under the scheme the health committee becomes the responsible authority, comprehending within its sphere of activities all aspects of the work, economic, medical, social, financial, and educational (without prejudice to the powers and duties of the Education Committee). The special Blind Persons Act subcommittee, in addition to five members of the health committee, includes representatives of the Education Committee of the Board of Guardians and of the voluntary institutions for the blind in Birkenhead and Liverpool. Full particulars of the new scheme are included in the report. The blind persons coming within the scope of the Act on March 31st, 1929, numbered 219, 118 males and 101 females. None was under the age of 5, 8 were aged from 5 to 16, and 2 from 16 to 21. So

far as could be ascertained the age of onset of blindness was below 20 in 62 of the 219 cases—viz., 0–1 year in 29, 1 to 5 years in 9, 5 to 10 years in 7, and 10 to 20 years in 17.

The total births numbered 2923, and the antenatal clinic was attended by 493 expectant mothers. Dr. Mary A. S. Deacon reports that in all 612 new cases attended the clinic. Of 168 who were in their first pregnancy, 4 suffered from venereal disease; of 325 in a later pregnancy, 12 had venereal disease; and of 119 who were not pregnant, 17 had venereal disease. Dr. Deacon is also in charge of the special V.D. clinic for women and children. For the purpose of health education Birkenhead joins in the scheme conducted jointly by the Merseyside boroughs, and Dr. Mathieson states that this campaign has been welcomed by the public.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDING NOV. 9TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 172 (last week, 168); scarlet fever, 3389; diphtheria, 1743; enteric fever, 66; pneumonia, 1121; puerperal fever, 36; puerperal pyrexia, 94; cerebro-spinal fever, 9; acute poliomyelitis, 29; acute polio-encephalitis, 2; encephalitis lethargica, 16; dysentery, 6; ophthalmia neonatorum, 77. No cases of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Nov. 12th-13th was as follows:—Small-pox, 195 under treatment, 9 under observation (last week 173 and 8 respectively), scarlet fever, 2795; diphtheria, 2656; enteric fever, 98; measles, 304; whooping-cough, 113; puerperal fever, 34 (plus 19 babies); encephalitis lethargica, 123; poliomyelitis, 7; "other diseases," 22. At St. Margaret's Hospital there were 9 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (3) from enteric fever, 22 (5) from measles, 9 (4) from scarlet fever, 16 (3) from whooping-cough, 32 (6) from diphtheria, 78 (20) from diarrhœa and enteritis under two years, and 62 (7) from influenza. The figures in parentheses are those for London itself.

No deaths from enteric fever were reported outside London. No large town reported as many as 10 deaths from diarrhœa, the highest figures being Birmingham 9, and Manchester 8. Manchester and Oldham each returned 3 deaths from measles, Liverpool 4 deaths from whooping-cough, Birmingham 10 deaths from influenza.

The number of stillbirths notified during the week was 260 (corresponding to a rate of 38 per thousand births) including 47 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. P. M. Rivaz is placed on the Retd. List with rank of Surg.-Capt.

The following appointments are notified: Surg.-Comdrs. S. R. Johnston to *Victory*, for P. and R.T. School; and K. A. I. Mackenzie to *President*, for three months' post-graduate course. Surg. Lts. S. Jenkinson to *Royal Oak*; N. J. U. Mather to *Repulse*; H. L. Belcher to *Daffodil*; and F. G. V. Scovell to *Dragon*.

ROYAL ARMY MEDICAL CORPS.

Capt. G. K. Maurice to be Maj., and remains secd.

Lt. G. M. Cooper relinquishes his temp. commn.

The undermentioned to be Lts. (on prob.):—Lt. A. N. T. Meneces, from Supp. Res. of Off., R.A.M.C.; Lt. E. J. Curran, who relinquishes his temp. commn.; F. R. Gedye; and J. E. Snow, who is secd. under the provisions of Art. 205, Royal Warrant for Pay and Promotion, 1926.

ARMY RESERVE OF OFFICERS.

G. F. Walker to be Lt.

TERRITORIAL FORCE.

The undermentioned Majs. to be Lt.-Cols.: W. H. Fisher, C. V. Bulstrode, H. M. Fort, W. F. Mackenzie, D. S. Sutherland, (Bt. Lt.-Col.) H. F. Wilkin, L. B. Cane, J. B. Stanley, D. W. Boswell, C. Corfield, J. Taylor, W. C. Gunn, G. H. Stevenson, S. F. Linton, W. F. Denning, N. M. Fergusson, J. E. N. Ryan, A. La T. Darley, A. J. Gibson, R. C. Clarke, A. C. Court, A. F. Lee, G. H. H. Waylen, and J. F. Edmiston.

Capt. A. H. Crook resigns his commn. and retains his rank.

Capt. D. C. Maclachlan to be Maj.

Lts. W. T. B. Joss and M. L. Sutcliffe to be Capts.

D. A. McM. Crawford (late Offr. Cadet, Edinburgh Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE.

Flying Officer H. D. Humphreys (Temp. Lt., General List, Army) is promoted to the rank of Flight Lt. (Dental) on promotion of the rank of temp. Capt. in the Army.

RESERVE OF AIR FORCE OFFICERS.

The undermentioned relinquish their commissions on completion of service: Flight Lt. J. G. F. Heal and Flying Officer H. W. D. Mackenzie.

INDIAN MEDICAL SERVICE.

Temp. Lts. Abdul Majid Khan and Patit Paban Chowdry to be Temp. Capts.

The undermentioned retire: Col. J. N. Walker and Lt.-Col. J. W. Watson.

The undermentioned resign their temp. commns.: T./Capts. Ratan Kumar Misra (and retains his rank), Tabla Ram Birmani, Pritam Variailsing Karamchandani, and T./Lt. Henry Brij. Nath Swift.

NAVAL MEDICAL OFFICERS IN CIVIL HOSPITALS.

Time spent in civil hospital appointments before entry into the Service has hitherto only been allowed to count for the purposes laid down in the Regulations for the entry of Medical and Dental Officers, R.N., if it was of not less than one year's duration for medical officers, or six months for dental officers. It has now been decided to remove this limitation, and consideration will accordingly be given to the grant of additional seniority, &c., to officers who served in such appointments for shorter periods than those hitherto laid down as the minimum. It has also been decided that officers who are permitted to continue to hold civil hospital appointments after entry into the Service may, at Admiralty discretion, be allowed to count for similar purposes the time spent in those appointments, both before and after entry into the Service, subject to the proviso that the total period allowed to count will not exceed one year in all for medical officers or six months for dental officers. The revised regulations will apply to all officers entered for permanent service or transferred to the permanent list on or after July 1st, 1926.

DONATIONS AND BEQUESTS.—Mr. Roger Lewis, of Malberry House, Little Mill, Monmouth, left £500 each to the Pontypool General Hospital and the Royal Gwent Hospital, Newport.—Besides other bequests, Mr. Samuel Crabtree Helm, of Ilkley, left £2000 each to the Bradford Royal Infirmary, the British Empire Cancer Campaign, Dr. Barnardo's Homes, Liverpool University, Manchester University, and the Society for the Prevention of Cruelty to Children; £1000 each to the Alton Cripples' Hospital and College, the Halifax Infirmary, the Ilkley Coronation Cottage Hospital, Liverpool Hospital, the Royal Eye and Ear Hospital, Bradford, the Royal Institution for the Blind, Bradford; the Society for the Prevention of Cruelty to Animals, Saltaire Hospital, the Seamen's Hospital, Greenwich; the YorkshireHome for Incurables, Harrogate; and the National Association for the Prevention of Tuberculosis.—Miss Charlotte Inston, of Oakhurst, Oxford-road, Moseley, Birmingham, left her residence and furniture to the Birmingham and Midland Free Hospital for Sick Children, £625 to the General Hospital, Birmingham, £500 to the Walsall Cottage Hospital, and £100 to the Birmingham and Midland Hospital for Women.—The Hon. Mrs. (Diana) Newton, of Portchester-road, Bournemouth, left £3000 to the Church Missionary Society for the English Hospital at Jaffa; the balance of a promised sum of £500 to the Derbyshire Royal Infirmary; £200 each to the Queen Victoria Memorial Home of Rest, Derby, and the Victoria and West Hants Hospital, Bournemouth; and £100 each to the Derby and Derbyshire Home for Females, and the Derbyshire Hospital for Sick Children.—Mr. Albert Charles Jones, of Bouncill Towers, Kenilworth, left £1250 to the General Hospital, Birmingham; £1250 to Queen's Hospital, Birmingham; and £500 to St. Dunstan's Hostel for the Blind.

Correspondence.

"Audi alteram partem."

THE CRAFT OF SURGERY.

To the Editor of THE LANCET.

SIR,—Prof. Tonks in his letter speaks of the craft of surgery and no one is better able to view surgery in this light. Being a distinguished artist himself, and having had a medical training, he knows that operative surgery is an art that requires a good deal of craftsmanship in the handling of tools.

The complete success of a surgical operation depends largely upon the experience, judgment, and dexterity of the operator and the facility with which it is carried out is a test of the operator's skill. Some training in this manual aptitude is aimed at in the operative surgery classes of the medical schools, where the student is first taught the principles of the art as illustrated in the classical operations. The pupil, however, can only attain to a limited degree of efficiency, for the cadaver imposes none of the restrictions and complications of the living. What is so often neglected, however, is instruction in the correct use of the common tools of surgery such as the chisel, the gauge, and the osteotome. It is surprising how many who, having passed through the schools, hardly know how to use the chisel. It is true that considerable practice is necessary to enable one to put these tools to their finer uses as anyone knows who has had experience in working on human bone with its varying density of texture in different individuals. But some attempt might be made to teach students the intelligent use of these instruments. The easy handling of tools is a distinguishing feature of the best craftsmen. That fine surgeon Arthur Barker, used to commend to the initiate the sewing of old kid gloves as an excellent practice for bowel stitching. And there is a world-famed surgeon abroad, almost unrivalled in the technique of a certain difficult type of bone surgery, whose skill is attributed to the fact that earlier in his career he was a considerable craftsman in wood. He is, of course, an extreme example of what can be attained by much practice with the implements of a craft. I am, Sir, yours faithfully,

A. ROCYN JONES.

Harley-street, W., Nov. 18th, 1929.

THE ACUTE VULVITIS OF LITTLE GIRLS: IS IT GONORRHŒAL?

To the Editor of THE LANCET.

SIR,—The contribution by Dr. E. Wordley in your issue of Nov. 16th (p. 1035) raises once more the question of the gonococcal nature of the acute vulvitis of infants and little girls. Is the diplococcus found in the discharge veritably a gonococcus? The astonishing rarity of ophthalmia as a complication is difficult to explain if virulent gonococci are present in the profuse discharge. That the discharge is infective and passes from one child to another is doubtless true, yet in my experience the frequency with which cases are detected varies directly with the energy with which the necessary examinations are made. For example, so long as the scare in the ward persists so long does the epidemic continue. It dies down only by the exhaustion of all concerned.

Many little girls are attending venereal departments of hospitals and undergoing prolonged local treatment. Some of them are gravely upset by the worry and anxiety of the whole business. Some lose weight, colour, and appetite, sleep badly, or have attacks of vomiting, entirely due to the nervous upset. Yet I have the feeling that like the leucorrhœal discharges of adult women, the persistence of the discharge is most intimately dependent upon the general health. With improvement in the general health, a discharge which may have been present for months will suddenly cease.

It would ease the situation, at present so distressing both for mothers and children, if the condition could be stated to be not venereal and not gonococcal. At present the position seems to me to be doubtful.

I am, Sir, yours faithfully,

H. CHARLES CAMERON.

Devonshire-place, W., Nov. 18th, 1929.

*** S. C. L. writes that Dr. Wordley's case has some points in common with one in his experience, in which a woman, aged 21, contracted a moderately severe urethritis and cystitis three weeks after her marriage. The infection was proved to be due to the coliform bacillus, and in our correspondent's view was an auto-infection dependent upon two factors: (1) the trauma of the initial coitus, and (2) an error of hygiene, the anus after defæcation being cleansed from the rectum towards the vagina, thus facilitating the infection of a part already made susceptible.—ED. L.

THE MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY, LIMITED.

To the Editor of THE LANCET.

SIR,—One must assume that Dr. E. F. Thomas's "reply" in your issue of Nov. 9th to Mr. Bowdler Henry's letter was not deliberately intended to mislead, but he obscures the issue, and the statements he makes are untrue. Not one of my resolutions "directly attacked" any of the recommendations of the board. Neither can Mr. Steadman's nomination for election by any stretch of the imagination be construed as an "attack" on the board's recommendation that the retiring directors should be re-elected since he was nominated three weeks before the board made any recommendations at all.

No, the board cannot make Mr. Steadman's candidature the excuse for sending out proxies. After the notices calling the annual general meeting had been issued, the board sent out a request for proxies in order to defeat my resolution fixing an age-limit for directors, and thus to keep themselves in office. This is the ethical question referred to by Mr. Henry, and I submit that this action of the board is discreditable.

I am, Sir, yours faithfully,

HARVEY HILLIARD.

Clarendon-place, W., Nov. 13th, 1929.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Thomas I should like to say that my remarks were merely the expression of a spectator desiring to see fair play. As such, and in the absence of bitterness or hostile intent, they do not constitute an "attack." I am not concerned per se with the board's reception of Dr. Harvey Hilliard's resolutions; but I am concerned to see that any of us, all equal members in this Society, contesting a vacancy upon the board, shall be ensured an impartial attitude on the part of those fellow members, who, by election, constitute the board for the time being.

Last year, when Mr. R. J. McNeill Love contested a vacancy, the retiring member was compelled by decision of the board—and, as I think, rightly so—to send out his own proxies at his own expense. This year, under the shelter of a general proxy, issued sometime after intimation had been given that there would be a contestant, the board—wrongly as I maintain—took the interests of the retiring members under its (official) protection, making their battle its battle. Thus, using the Society's funds, they converted what should surely be a private contest into

one of board *versus* contesting member. By so doing, whatever their intention to the contrary, they placed themselves in the discreditable position of appearing banded together to keep a newcomer out.

I am, Sir, yours faithfully,

BOWDLER HENRY.

Harley-street, W., Nov. 13th, 1929.

To the Editor of THE LANCET.

SIR,—By the courtesy of the Editor I have seen forward copies of the letters of Dr. Harvey Hilliard and Mr. Bowdler Henry with an intimation that if I so desired I might send a reply.

I have nothing to add to the plain statements I made in my previous letter, and I cannot see that anything I have said is affected by the assertions of Dr. Harvey Hilliard or the criticisms of Mr. Bowdler Henry, as continuity of directorate is an essential factor in the successful conduct of a business, and the success of the Medical Sickness Society is self-evident.

I am, Sir, yours faithfully,

E. F. THOMAS.

Oakley-street, S.W., Nov. 19th, 1929.

ROYAL MEDICAL BENEVOLENT FUND CHRISTMAS GIFTS.

To the Editor of THE LANCET.

SIR,—It has been the practice of the Royal Medical Benevolent Fund for many years to give a Christmas gift to each annuitant and some of the most necessitous of the grantees.

The annuitants, who are over 60 years of age, and the grantees are both deprived of those little amenities of life which the more fortunate of us enjoy. Many of our beneficiaries are alone in the world as their friends and relations have passed over, and consequently they will not receive any gift or extra comfort this Christmas. Last year the Fund gave to each 30*s.*; this meant an expenditure of £500. Many readers will wish that the recipients of this gift in former years should not be deprived of it this year. But unless I am favoured by a generous response to this appeal, our Funds will not allow of this gracious and friendly act.

Will every reader of this letter please consider if he or she cannot send to the hon. treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, London, W.1, a Christmas donation. I shall be grateful whether the donation be large or small.

I am, Sir, yours faithfully,

THOMAS BARLOW,
President.

Nov. 18th, 1929.

THE SIGNIFICANCE OF VISCEROPTOSIS.

To the Editor of THE LANCET.

SIR,—Your leading article of last week tempts me to suggest a possible explanation of the greater incidence of abdominal invalidism in women. I offer it for what it is worth, since it has formulated itself rather as an impression than a true hypothesis supported by adequate evidence. It depends on the biological fact implicit in the statement that, whereas man possesses a sex organ, woman *is* a sex organ, In other words, the average woman is so completely adapted to one great biological function that her range of adaptation outside it is much less than that of the average man. In a woman of a constitutional inferior type that range may decline to zero and with it her capacity for sublimation. In such a case excessive repression or inadequate functioning result in a lapse into invalidism, the organism withering, as it were, from lack of the essential stimulus necessary to maintain it in health.

I am, Sir, yours faithfully,

HARRY BEDINGFIELD.

Leeds, Nov. 18th, 1929.

INTERPRETATION OF FERTILITY TESTS.

To the Editor of THE LANCET.

SIR,—From Dr. Browdy's letter I gather that I did not make perfectly clear the fact that oligozoöspermia indicated a lowered fertility rather than an absolute sterility. Theoretically a man with one spermatazoon per cubic centimetre of semen is capable of paternity. Still less can a man with a count of 60,000,000 be considered sterile, although from the experience of Comber and Sanders he would appear to be much less likely to have children than one with a count of 100,000,000. I also "would hesitate to give a negative reply," I would merely state that a man with a count of under 60,000,000 showed a fertility below what is considered the normal.—I am, Sir, yours faithfully,

KENNETH WALKER.

Harley-street, W., Nov. 19th, 1929.

LATER BREAKFASTS IN HOSPITALS.

To the Editor of THE LANCET.

SIR,—Adverting to the annotation on p. 937 of your issue of Nov. 2nd, may I point out that the custom of not calling any patient before 7 A.M. has now been adopted in this hospital. For many years past it has been the practice for those occupying private rooms not to be awakened before this hour, and this practice has now been extended to all patients with satisfactory results. By a slight adjustment the hours of duty for the nursing staff have been reduced by this innovation.—I am, Sir, yours faithfully,

H. J. SAY,
Secretary, London Fever Hospital.

Liverpool-road, N., Nov. 13th, 1929.

SOUTHEND GENERAL HOSPITAL.—The Duchess of York last week laid the foundation-stone of the new hospital which is being erected upon a site exceeding 12 acres, given by Lord Iveagh, who has also subscribed £20,000 towards the cost of building and is, in addition, adding one-third to the amount subscribed during the present year. The first section, which will provide 196 beds towards the intended total of 400, will include two ward pavilions, a children's wing, an operating and electrical block, an administrative block, and a nurses' home.

RADIOLOGY AT THE CANCER HOSPITAL.—The House Committee of the Cancer Hospital, Fulham-road, last week approved of an advanced course in radiology which has been drawn up by the Medical Committee. It is stated that the course will deal with all aspects of the subject on a larger scale than has before been attempted in London. The course will begin on Jan. 21st, and will be continued on succeeding Tuesdays and Thursdays until April 10th. It will consist of lectures and practical work, with demonstrations in both laboratories and hospital. A new radiological block is to be built which will add about 70 beds, bringing up the total to nearly 200. There will be pay-beds for middle-class radium patients. These developments will cost £150,000 and the hospital is appealing for that sum.

SCHOLARSHIPS AT EPSOM COLLEGE.—A vacancy has arisen for a Leopold Salomons Entrance Scholarship of £50 a year, open to the son of a member of the medical profession either living or dead.

Those may apply (*a*) who were over 11 years and under 14 years of age on Jan. 1st last; (*b*) who can show an adequate standard of education for their age; and (*c*) whose financial condition is such as to make it impossible or difficult to obtain an education at the College without the help of the scholarship.

A vacancy has also arisen for a Sir Walter Buchanan scholarship of about £38 a year. It is primarily intended for the sons of deceased or prematurely invalided officers of the Indian Medical Service, but failing any such candidates, it may be granted to the sons of medical men of purely British parentage who are in necessitous circumstances and who have practised medicine for at least five years in India. Forms of application for both scholarships may be had from the Secretary, 49, Bedford-square, London, W.C. 1. Applications must be forwarded before Dec. 4th.

Obituary.

THOMAS OPENSHAW, C.B., C.M.G.,

CONSULTING SURGEON TO THE LONDON HOSPITAL.

WE regret to announce the death of Mr. T. H. Openshaw, the well-known orthopædic surgeon, which occurred on Sunday last, Nov. 17th, in a nursing home, after a brief illness.

Thomas Horrocks Openshaw was born in 1856, a Lancashire man, but educated at the University of Durham and the London Hospital. He took the English Conjoint Diploma in 1884, being already L.S.A., and graduated in medicine at Durham in 1883. In 1886 he obtained the diploma of F.R.C.S. Eng., and the degree of Bachelor of Surgery at Durham, where he proceeded to the M.S. He was for a period demonstrator of anatomy at the London and in 1890 was appointed assistant surgeon. Nine years later he became full surgeon, a position which he held for no less than 27 years, being appointed consulting surgeon in 1926. From the beginning Openshaw was a strong personality at the London Hospital. A successful student, a good football player, and a simple nature which manifested itself in strong friendships and strong dislikes, he was inevitably respected on the one hand for his high qualities and on the other was universally known as "Tommy," proving how much his genial characteristics were appreciated. Openshaw had just become full surgeon to his hospital when the South African War broke out and he was appointed surgeon to the Imperial Yeomanry Field Hospital, later becoming P.M.O. at one of the hospitals in Pretoria. He was mentioned in dispatches and was awarded the C.M.G., and was for a time a prisoner in the hands of the Boers.

MR. OPENSHAW.

[*Photograph by Elliott & Fry.*

Although originally elected to the London Hospital as a general surgeon, Openshaw early in his career devoted himself to orthopædics and indeed founded the orthopædic department of the hospital. His accurate knowledge of anatomy, gained as a demonstrator for many years, stood him in good stead here, and he soon became recognised as an authority on the subject, his private practice in the later phases of his professional life being almost entirely orthopædic in character. It was in this connexion that he made for himself an enviable name after the European War. When this war broke out he was too old to serve abroad, but he was appointed consulting surgeon to the Eastern Command with the rank of Colonel, A.M.S., was elected surgeon to King Edward VII. Hospital, and later was attached to Queen Mary's Hospital, Roehampton, where he became senior surgeon and where his special knowledge was of the utmost value to many wounded soldiers. No one who was ever present at the demonstrations which Openshaw would give of the manner in which many exhibiting grave anatomical defect would respond to his invitation to show what they could do with the aid of surgical appliances, can ever forget the scene. It has been described as resembling a ringmaster supervising a circus performance, where the performers themselves seemed to enjoy playing their part.

Openshaw, though so enthusiastic about, and well-versed in his specialty, wrote no treatise on this or any surgical subject, but he acted for a time as joint editor of the Catalogue of the Pathological Museum of the London Hospital. He served for an extended period—namely, 1916 to 1924, on the Council of the Royal College of Surgeons, but took no prominent part in medical politics. His medical interests, however, were numerous, for he was consulting surgeon to the Royal National Orthopædic Hospital, the Poplar Hospital for Accidents, and the Cottage Hospitals of Tilbury, Sidcup, and Woolwich, while he was also surgeon to the Royal Surgical Aid Society. His military inclinations were pronounced, for as a lad he had been a keen Volunteer—he held a commission as Surgeon-Lieutenant in the Volunteer Medical Staff Corps when he went to the South African War—he became a Lieut.-Colonel to the Lincolnshire Yeomanry, and received the Territorial Decoration. For his services in the European War he was created C.B. He was a prominent Freemason and had been Master of the Shipwrights Company.

Openshaw married in 1890 Gertrude, daughter of Mr. William Pratt, of Bruern Abbey, Oxford, who predeceased him by a few months. A daughter survives him, but his other child, Major L. P. Openshaw, was killed in a flying accident in the summer of 1927.

SIR ARCHDALL REID, K.B.E., M.B., C.M. EDIN., F.R.S.E.

WE regret to announce the death of Sir Archdall Reid, the well-known authority on heredity, which occurred on Monday last at Southsea, where he had resided for practically the whole of his professional life.

George Archdall O'Brien Reid was born in India, at Roorky, his father being an officer in the Bengal Native Infantry. He received his medical education at the University of Edinburgh, and graduated M.B., C.M., in 1881. But he did not settle down to medical practice until he had undergone varied experiences as a game-hunter, school-master, and prospector, travelling in this way extensively in the Pacific and America, returning also to India and visiting New Zealand. In 1887 he came to reside in Southsea, where he remained until his death.

Throughout his long years of medical practice in one place Reid devoted himself to the study of heredity, basing his long and important treatises and his many public controversies alike on his intimate acquaintance with pathological conditions in a large town and his varied knowledge of primitive life and tropical pathology, while his knowledge was perpetually reinforced by acute and ruthless study of the great literature of the subject. It is as an authority on heredity that he will be remembered, and seeing how essentially the study of heredity is bound up with the study of the passage of time, it is somewhat remarkable that his strongly held views should to a great extent have been contained in a book which he wrote, over 30 years ago, entitled the "Present Evolution of Man." He was young to grapple in a considered volume with the central ideas implied in the word evolution, but he showed at once that he had gained a clear insight into the main hypotheses and was able to judge between them; he was critical whether he was follower or opponent, and could bring independent thought and learning to support

independent views. His insistence on the predominant influence of education and example went to support his broad inference, at the time much challenged, that most if not all the mental qualities exhibited by man and characterising more especially different races were due to a transmission of the power or capacity for acquisition which had been gained and was not inborn; and in reference to the part played by evolution in a struggle for existence against zymotic disease, he held that, while in the process of time susceptibility to a disease might lessen as the attacks of pathogenic organisms might increase, he brought forward many-sided evidence to support his view that a growing racial immunity would accompany in a satisfactory manner a dying-off of the weaker members. On the question of alcoholism he declared that "if the world is to become more temperate it must be by the elimination not of drink but of the excessive drinker," thus on his first appearance as an author stating what may be termed the principle which in his future writings and controversies he upheld.

In 1901 he published "Alcoholism: A Study in Heredity," an expansion of these views, and a consideration of the phenomena of national drunkenness by the laws of biology, finding the action of alcohol on the race closely analogous to that of the zymotic diseases. Put briefly, this implied that the nation which had not at any time developed national drunkenness would be liable to massive risks from alcohol, which would not be incurred by nations which had passed through stages of national abuse into temperance. The theory was ably advanced and Reid's powers of argument made him an extremely difficult opponent, but he was attacked vigorously by the advocates of legislation against national intemperance, and the controversy, as it appeared in our columns, makes informing reading which is sometimes quite amusing.

In 1905 Reid published the "Principles of Heredity," undoubtedly impelled to do so by the varied nature of the opposition which his previous work had stirred up. He did not confine himself to the subject of heredity, but essayed the ambitious task of unfolding a complete scheme of biological evolution. The work was distinguished alike by incisiveness of diction, originality of thought, and cogency of argument, and it formed, directly and indirectly, a vigorous plea for the education of the public, especially the young, in the subject of heredity. For Reid held that, with the exception of a few organic instincts, man's mental equipment and much of his physical character are essentially acquired, and his message throughout was that proper education in biology was needed to rear a race of capable citizens. His last work was the outcome of the honest efforts and the sincere thinking of one who during the war had realised the dimensions of the menace of venereal disease. His book, "The Prevention of Venereal Disease," was not, and was not intended to be, an impartial statement. Alike from personal experience, the digestion of many reports and conversations with many authorities, he came to the conclusion that the application of simple antiseptic measures ought to be available, and that their use ought to be insisted upon, holding that instruction should be made public, and that neither the fear of infection nor the fear of the pulpit could be relied upon as deterrents.

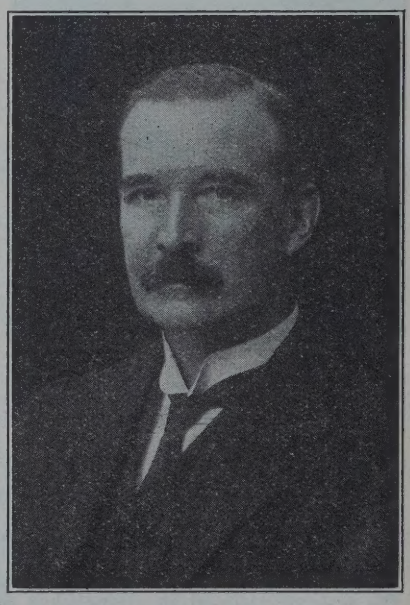
Sir Archdall Reid married Florence, daughter of Lieut.-Colonel John Mahony, and she predeceased him. He was created K.B.E. in 1919.

CHAS. HAMILTON WHITEFORD, M.R.C.S. ENG.

Mr. Hamilton Whiteford, whose death on Nov. 13th is reported from Plymouth, was well known as a surgeon in the neighbourhood, and came of an old Plymouth family. He was educated at Plymouth College, at that time known as the High School for Boys, and completed his medical education at St. Bartholomew's Hospital. On qualifying in 1892, he took up house appointments at Coventry, and then returned to his home town as resident at the South Devon and East Cornwall Hospital, where he afterwards became honorary anæsthetist. Though he never had an extensive practice he was a capable surgeon, and spared no pains in the study of his profession. He took a lively interest in keeping abreast of the latest methods and put them into practice with care and thoroughness. A somewhat brusque and outspoken manner was only a veneer over a genuine and kindly nature. Those who knew him well were aware of many acts of sympathy and self-sacrifice. Mr. Whiteford was an active member of the Plymouth Medical Society, where his shrewd and outspoken criticism was keenly appreciated, and enlivened many an otherwise featureless discussion. Until his sight became impaired he was an excellent all-round athlete, and at one time was one of the most competent lawn-tennis players in the West of England. His death will be widely regretted, and especially by those who knew him best.

BRIAN MELLAND, M.D. LOND., M.SC. MANCH.

Dr. Melland, who died at his home at Bowdon on Nov. 14th after a short illness, was representative of the best type of practitioner and was responsible for introducing one of the most effective remedies yet available for asthma. Born in Manchester, he was the son of Dr. Frederick Melland, who came to the city in 1839 and studied and practised medicine for the long period of 73 years till his death in 1911. Brian Melland was educated at the Manchester Grammar School and the Owens College, and became Doctor of Medicine of London University and Master of Science of the Victoria University. He held hospital appointments at the Manchester Royal Infirmary and the Children's Hospital. As a student he showed great promise in research work and if his health had been good might have made his mark in the world of science. His work on the histology of striped muscle-fibre, published in 1884, revealed him as a man with original ideas, and a paper published in our own columns in 1910 on the treatment of spasmodic asthma by the hypodermic injection of adrenalin introduced to us what is still perhaps the most potent drug in that complaint. In his younger days Melland, like other members of his family, was a sound athlete in various games but especially in tennis and lacrosse. In the latter game he played for the North and was picked to represent England. An attack of acute rheumatism prevented him playing and a further attack made it advisable that he should go abroad. He settled, therefore, in Grand Canary where he practised for about ten years. His account of the Canaries (*Medical Chronicle*, 1897) is one of the best that has been



DR. BRIAN MELLAND.

written. On his return to England he settled in Bowdon, joining the late Dr. W. Owen Jones in practice, and here he remained till his death, winning general affection and respect. He was twice married, first to Florence Trevor-Roper, and secondly to Kathleen Oliphant. His two sons were both killed in the war and he leaves a widow and five daughters.

DANIEL MARTIN BADEN EVANS, M.B., M.R.C.P. Lond., F.R.C.S. Eng.

At the age of 29 Mr. D. M. B. Evans died on Nov. 9th of septicæmia following a slight injury on the football field. At the time of his death he was surgical registrar at Charing Cross Hospital, where he had received his clinical training. He entered the hospital from Cardiff Medical School in 1921, qualified two years later, became a Member of the Royal College of Physicians in 1926, and a Fellow of the Royal College of Surgeons last year. His career as a student brought him many prizes, and he sought a wide experience in appointments after graduation. These included work as resident medical officer at Queen Mary's Hospital for Children, Carshalton, and at the Bolingbroke Hospital, as senior house surgeon at the All Saints' Hospital for Genito-urinary Diseases, and demonstrator of anatomy at King's College. "By his death," writes Mr. Norman Lake, "Charing Cross Hospital has lost one of its most brilliant students of recent times. For the past two years he had identified himself very closely with the work of the hospital while he held the post of surgical registrar; indeed, it was probably his keen and constant application to the duties of that post which so reduced his resistance as to render him a ready prey to the septicæmia which so rapidly and tragically caused his end. His great ability was obvious to all, and the future had much in store for him. The hospital, the whole profession, is the poorer for the loss of a life so full of promise—a skilful surgeon, a lucid teacher, a musician, and a sportsman."

We have to record the death of Dr. Matthew William Gairdner, on Oct. 11th, at the age of 79. His father, Dr. Matthew Baillie Gairdner, of Crieff, had seven sons, of whom Matthew was the third. He took up medical study at Edinburgh in 1867, and was one of Lister's dressers. On qualifying as L.R.C.S. Edin. in 1871 he held house appointments at the Royal Infirmary, the Chalmers Hospital, and elsewhere, serving under such distinguished men as Annandale, Heron Watson, George Balfour, and Halliday Douglas. After work as a ship's surgeon and in India he settled in Naples, where he practised for the rest of his professional life. Dr. Gairdner's only remaining brother is Dr. James Gairdner, of Crieff. His son is on the resident staff of the London Hospital.

Dr. Frank Herbert Shaw, who died at St. Leonards-on-Sea on Nov. 11th, was a well-known medical practitioner in St. Leonards and Hastings. For over 40 years he was actively associated with the Buchanan Hospital as surgeon. A son of Dr. Archibald Richard Shaw, of St. Leonards, he was born in London in 1858. He studied medicine at King's College, completing his training at Guy's Hospital and in Germany, and became M.R.C.S. in 1881. He first went into practice at Chester, but after a time returned home to assist his father. There were few organisations in Hastings and St. Leonards with which Dr. Shaw was not in some way connected. He was at one time a keen Volunteer, and for a period was surgeon-captain to the old 2nd Cinque Ports Garrison Artillery. Twice married, he leaves a widow and two sons and two daughters.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Annual Holiday Bill.

On Friday, Nov. 15th, in the House of Commons, Mr. Winterton moved the second reading of the Annual Holiday Bill which, he said, provided that every employed person should be entitled to an annual holiday of not less than eight clear consecutive days on full pay. If any attempt were made to evade the provision with regard to the payment of wages, either by the dismissal of the workman or by his suspension immediately before the annual holiday became due, the penalty on conviction was a fine not exceeding £20. The Bill contained a provision against contracting out by arrangement between the employer and the workman, while in the case of the fixing of wages by piece-work rates it was provided that that should be arranged by regulation. The annual holiday was not in any way to interfere with the existing rights of anyone to the customary bank or other holidays, and it was made clear that the eight days were additional to any rights enjoyed under existing law. An employed person was defined as anyone employed under a contract of service or apprenticeship, and that would cover all the approximately 12,000,000 employed persons in the country. At present 3,000,000 persons enjoyed the privilege of at least a week's holiday with pay, and the Bill would add another 9,000,000. The measure was opposed by certain Members of the House because it was suggested that it would place a burden on industry. But an annual holiday surely meant improved health, and that must mean increased efficiency, which in turn would mean increased output and production. The Bill would have the effect also of bringing more people into employment, and would help the seaside resorts.

Mr. J. Hudson seconded the motion for the second reading.

An Amendment.

Captain Hudson moved the following amendment:—

"This House declines to proceed with a Bill which materially affects every phase of industry, agriculture, and commerce, which interferes with the long-established custom of employers and employed to settle conditions in their own industries, and which is consequently of so far-reaching a character that this House should not entertain it unless it is presented by a Government which is in a position, after full consultation with all interests concerned, to give the House authoritative information on the cost and effects of the proposal and the measure of agreement thereon throughout the industries affected."

He said that he and the other Members of the Conservative party were opposed to the Bill, not because it was bad in principle, but because they believed that in its present form it would have such an upsetting effect upon industry that it would do more harm than good. The mining industry had worked out the cost as being something like £2,250,000 a year, which was estimated to be equal to 2½*d.* per ton of coal. The country was, he believed, moving along the lines of a universal holiday for all workers, and he did not think there was a single Member of the House who was opposed to that, but this Bill would not, in his opinion, bring that about. In any case, a proposal of this kind should be made, if it was to be made at all, not in a private Member's Bill but in a Government measure.

The View of the Government.

After some debate,

Mr. Lawson (Parliamentary Secretary to the Ministry of Labour) said that the Government accepted the principle of the Bill, but was conscious of the fact that the matter could not be dealt with in such simple terms as it proposed. They felt that there was some need of consulting the industries of the country before anything on a big scale was done. In view of the heavy programme of Parliamentary business, the Government could give no real guarantee that time would be found for its further stages if the measure obtained a second reading. The Government hoped, however, that the industries concerned would assist in the spread of the desirable practice embodied in the Bill.

After the closure had been carried by 184 votes to 63, the amendment was negatived without a division, and the Bill was read a second time.

HOUSE OF COMMONS.

Wednesday, Nov. 14th.

Hospital Accommodation for Rhodesian Miners.

Sir Alfred Knox asked the Under Secretary of State for the Colonies the present estimated numbers of Europeans and Natives, respectively, at present employed on the copper

mines of Northern Rhodesia; what hospital accommodation for these employees was now provided, and where; whether any new schools were now being built to provide for the education of children of employees in these mines; whether any new legislation regarding safety and workmen's compensation had been passed to protect workers in these mines; and whether he would require the furnishing of regular reports on all casualties similar to the returns required from the mines in the Gold Coast.—Mr. LUNN replied: For the whole industry, natives 14,883, and Europeans 1118, well-equipped hospitals are now available at the established mines, and are being provided at mines in the development stage. Educational questions and revision of existing protective legislation are under consideration. Regular casualty reports will be required.

THURSDAY, NOV. 15TH.

Charges of Indecency in Hyde Park.

Mr. DAY asked the Home Secretary the number of charges of indecency brought by the police under the Hyde Park regulations during the months of July, August, and September, 1929; and in how many cases was the police evidence supported by that of private persons.—Mr. CLYNES replied: The number of charges of indecency brought by the police under the Hyde Park regulations was three in July, seven in August, and five in September. In only one case was the police evidence supported by that of private persons.

Silicosis.

Mr. HANNON asked the Home Secretary, in connexion with and in view of the wide scope of the Various Industries (Silicosis) Scheme, 1928, if he would indicate the precise industries, other than the manufacture of pottery and scouring powders and the processes in these industries, in which he had had definite evidence of silicosis, disabling silicosis, or death from silicosis, or of any of these accompanied by tuberculosis, and their number.—Mr. CLYNES replied: The following are the particulars (so far as it has been possible to trace them at short notice) of ascertained cases of silicosis which have come during the last three or four years to the knowledge of the Factory Department or the Mines Department in the particular industries or processes covered by the Various Industries Scheme, excluding the potteries and the manufacture of scouring powders: One case in each of the following industries or processes—sand-grinding (iron foundry); silica milling (silica flour manufacture); stone crushing (road making); tin mining; and lead mining; two cases in millstone dressing (corn milling); four cases in sandblasting (metal works); ten cases in stonemasons' work; and 25 cases in coal mining. These cases are mostly fatal cases where the cause of death was ascertained through a post-mortem examination ordered by the coroner, and they must not be taken as affording any criterion to the incidence of the disease in the industries or processes concerned or as representing the whole or even the main part of the experience on which this scheme is founded. It must be borne in mind that the disease is not notifiable as other industrial diseases are, and that, as pointed out in the recent report of the Committee on the Medical Arrangements for the Diagnosis of Silicosis, the diagnosis of this disease involves expert examination which has not been generally available. As a consequence, except in those industries under the Refractories Industries Scheme in which special arrangements for expert examination have been instituted, the disease has not been diagnosed as such, but has been set down as some other form of disease of the respiratory system. The disease has, however, been the subject of extensive medical research for a number of years, and much experience has also been gained through the periodic examinations carried out under the Refractories Industries Scheme, and I am advised that the result has been to show conclusively that wherever workmen are subject to certain conditions of exposure to silica dust, they incur a substantial risk of the disease and, in fact, wherever any special inquiry has been held into any process giving rise to such conditions, silicosis has been found to be present to a serious extent. For instance, the inquiry into the sandstone industry in 1928 showed that out of 454 workmen examined 112 were found to have contracted silicosis. The honourable Member will understand, therefore, that in selecting the industries and processes for inclusion in the Various Industries Scheme, regard was necessarily had not only to the ascertained cases of silicosis but also to the degree to which the workers would in fact be liable to be exposed to silica dust in the particular circumstances of their employment.

Medical Referees and Workmen's Compensation.

Mr. MCKINLAY asked the Home Secretary the number of cases submitted to the medical referees under the Workmen's Compensation Act during the past three years in Glasgow, Edinburgh, and Dundee, and the number of such cases decided in favour of the injured persons.—Mr. CLYNES replied: The number of cases referred were as follows: At Glasgow 179 in 1927, 219 in 1928, and 265 in 1929; at Edinburgh 114 in 1927, 165 in 1928, and 147 in 1929; at Dundee 37 in 1927, 16 in 1928, and 19 in 1929. The information asked for in the last part of the question is not available.

Gifts and Inducements and Panel Prescriptions.

Sir KINGSLEY WOOD asked the Minister of Health whether he proposed to make any alteration or amendment in the Medical Benefit Regulations relating to gifts or inducements by chemists of coöperative societies concerning National Health Insurance prescriptions.—Mr. GREENWOOD replied: The matter is engaging my consideration.

Proposed Raising of Insurance Income Limit.

Mr. D. G. SOMERVILLE asked the Minister of Health if he would consider appointing a committee to investigate the question of raising the present limit of £250 entitling participation in the National Health Insurance Act to a higher figure more consonant with the existing cost of living.—Mr. GREENWOOD replied: I will see that the matter is brought to the notice of the committee which is engaged in a survey of the schemes of social insurance.

Local Authorities and Blind Persons.

Mr. TILLETT asked the Minister of Health the number of local authorities who had made arrangements for promoting the welfare of blind persons under the powers conferred upon them by the Blind Persons Act, 1920, Section 2.—Mr. GREENWOOD replied: Such arrangements have been made by all the 146 local authorities under the Blind Persons Act.

Application of Artificial Cream Act.

Mr. LAWTHER asked the Minister of Health if his attention had been called to the proceedings at Marlborough Street police-court on July 2nd and 12th, and the subsequent appeal at the London sessions on Sept. 13th, when it was decided that the Artificial Cream Act could not apply as the case had not been brought forward by an official of a local authority but by an outside authority; and if he would be prepared to bring forward legislation empowering individuals to seek protection under the said Act where county or borough councils failed to carry out their statutory duties.—Mr. GREENWOOD replied: I am aware of the proceedings referred to by my hon. friend, but I cannot undertake to introduce amending legislation on this subject at the present time.

Open Spaces in London.

Captain AUSTIN HUDSON asked the Minister of Health whether he was aware that certain recreation grounds, playgrounds, and open spaces in London were being closed in order that local authorities might utilise the sites for building purposes; and whether, in view of the increasing need for such open spaces in towns and cities, he could take any steps to deal with this matter.—Mr. GREENWOOD replied: I am not at present aware of any case where in London a public recreation ground, playground, or open space has been closed for building. If the hon. Member will give me particulars, I shall be glad to make inquiries.

Vaccination and Small-pox.

Mr. FREEMAN asked the Minister of Health whether his attention had been called to the deaths of five children within one month following vaccination—viz., Terence Kellaher, 5 months, vaccinated August 14th, died Sept. 15th; Ronald Whitehouse, 5 months, vaccinated August 23rd, died Sept. 5th; Leslie Brewer, 6 months, vaccinated Sept. 11th, died Sept. 18th; Frederick Wright, 11 years, vaccinated in March, died Sept. 12th; and Jackie Balshaw, 4 months, vaccinated Sept. 12th, died Oct. 1st; and if he would institute inquiries as to whether vaccination was one of the contributory factors in the deaths of these and similar cases.—Mr. GREENWOOD replied: My attention has been called to two of the five deaths referred to which occurred in London, Blackburn, Bolton, West Bromwich, and Somerset. In neither of these two was vaccination one of the certified causes of death. In both cases post-mortem examinations were made and inquests held, and the deaths were found to be due to causes entirely unconnected with vaccination. I have no information as to the remaining three cases beyond the death certificates which show that in two of them post-mortem examinations were made, and in none of the three was there any reason to think that vaccination contributed in any way to the fatal issue. As regards the last part of the question, I may say that all cases in which death is stated to have resulted directly, or indirectly, from vaccination, are reported to my department by the Registrars of Births and Deaths, and are made the subject of investigation.

Mr. JAMES GARDNER asked the Minister of Health the number of deaths in respect of which the death certificate

included the word vaccination, or vaccinia, or vaccine, or similar words, registered during each of the last six months for which figures were available.—Mr. GREENWOOD replied: The number of deaths are as follow: April, none; May, 4; June, 3; July, 4; August, 5; and September, 1. These figures include two deaths in which the words "vaccination" or "vaccinia" did not appear on the medical certificate or coroner's certificate, but which, on inquiry by the Registrar-General, were stated to be associated with vaccination, and one case in which the word "vaccination" appeared on the medical certificate in the form of a positive denial that the vaccination had any connexion with the death.

Approved Societies and Ophthalmic Treatment.

Dr. MORRIS-JONES asked the Minister of Health how many approved societies under the National Health Insurance Acts provided facilities for optical and/or ophthalmic advice and treatment for insured persons; whether there were any approved societies that did not provide such facilities; and, if so, whether he would give the names and numbers of such societies.—Mr. GREENWOOD replied: Consequent upon the second valuation, 5883 societies and branches in England and Wales, comprising nearly 12,000,000 members, have made arrangements to provide ophthalmic treatment, including the provision of optical appliances, as an additional benefit; 1156 societies and branches, with about 1,700,000 insured members, do not provide this benefit, generally because their surpluses have been used for other benefits. I cannot undertake to give the names of these societies and branches.

Approved Societies and Dental Treatment.

Dr. MORRIS-JONES asked the Minister of Health how many approved societies under the National Health Insurance Acts provided or contributed towards dental treatment for insured persons; whether there were any approved societies that did not provide or contribute towards such treatment; and, if so, the number and names of such societies.—Mr. GREENWOOD replied: The number of approved societies and branches in England and Wales which contribute towards the cost of dental treatment of their members as an additional benefit is 6545, covering 12,727,000 insured members. Only 494 societies and branches, with approximately 900,000 members, are not in a position to give dental benefit, either because they selected other additional benefits, or because they had no available surplus. I cannot undertake to give the names of these societies and branches.

Plague in British India.

Major GRAHAM POLE asked the Secretary of State for India the number of cases of and deaths from plague in British India in each of the last five years; and whether any progress was being made in India in respect of the methods of effectively dealing with this scourge.—Mr. WEDGWOOD BENN replied: I have no reliable figures of cases. Plague figures have shown on the whole a marked decline in recent years. Research work on prophylactic methods has yielded valuable results, but I am advised that there is not yet any reliable treatment of the disease. Progress depends largely on the willingness of the people to coöperate with the authorities in making fuller use of well-established measures, especially inoculation. The figures of deaths from plague in British India during the last five years are as follows:—

Year.	Deaths.	Year.	Deaths.
1924	361,843	1927..	32,160
1925	117,717	1928..	82,678
1926	196,249		
		Total	790,647

Opium Revenue in British Empire.

Mr. MANDER asked the Under Secretary of State for the Colonies what States within the British Empire at the present time were deriving revenue from opium; and to what extent.—Mr. LUNN replied: The following statement shows the British Colonies and Protectorates which derived revenue from the sale of opium in 1928: Hong-Kong, $2,382,101·37. Straits Settlements, $12,322,263. Federated Malay States, $11,782,128. Unfederated Malay States: Johore, $4,224,465; Kedah, $2,052,564; Parlis, $206,508; Kelantan, $435,848; Trengganu, $291,570; and Brunei, $79,447. North Borneo, £93,498; Sarawak, $951,118.09; Ceylon, Rs. 307,000 (estimated receipts 1929–30); and Wei-hai-wei, $2,700 (estimated receipts 1928–29).

MONDAY, NOV. 18TH.

Ex-Service Men and Seven-years' Limit.

Mr. DAY asked the Minister of Pensions whether he could now make a statement as to the action the Government proposed taking to abolish the seven-years' limit with regard to ex-Service men. Mr. SHILLAKER asked a similar question.—Mr. F. O. ROBERTS replied: The operation of the seven-years' time limit on the making of fresh claims for disablement, and of the arrangements made by the late Government for dealing with certain cases affected by it, has been closely investigated by me since I assumed office. At the present time, more than ten years since the men were demobilised, cases in which disablement by war service can now be justifiably claimed for the first time are, as is admitted on all hands, few in number, and will necessarily become fewer. Old war wounds, thought to have been healed, but now giving trouble for the first time since the war, are readily identifiable, and are already dealt with both by medical treatment and pension. New claims in respect of some ailment or disease are the more numerous, but comparatively very few cases are found on investigation to be genuinely traceable to war service. The situation is one that requires to be met by provision for a small and diminishing number of genuine cases only. These cases require to be dealt with on different lines from those that were suitable at an earlier period of pensions administration.

The Government intend taking such action in regard to the time limit as will secure "that all claims shall still be considered." The arrangements made by the late Government do not, in my opinion, fully secure this object, and therefore the Government have decided to amend and extend them in important respects. For the future, the arrangements for dealing with belated claims for disablement will be such as to ensure the following essential points: firstly, that no application is rejected solely on the ground that it is barred by the time limit; secondly, that every applicant is given explicit opportunity to produce evidence in support of his claim; thirdly, that all evidence in support of a claim is fully considered, and every reasonable line of investigation indicated by the claim is pursued to the full, including medical examination wherever necessary. These arrangements will effectively secure that no bar is raised to the making or consideration of a claim. At the same time, I think it important that ex-Service men should feel assured that their claims are considered impartially. I am, accordingly, with this object, arranging to make use of the statutory powers of the local War Pensions Committees to hear and investigate cases of complaint from dissatisfied applicants. I intend, in addition, to secure the assistance of independent advice by the appointment of medical experts (to be nominated by the Presidents of the Colleges of Physicians and Surgeons), who will be associated with the Department in advising on all cases in which there is material conflict of evidence on the claim.

Replying to a question by Sir A. POWNALL, Mr. ROBERTS said there would be no rejection of claims on the ground of the time limit. Every case would be invited to give evidence; that evidence would be investigated through the War Pensions Committees or through the Ministry, and on top of that they would invite the assistance of independent medical experts.

Sir A. POWNALL: Is it not the case that no case was turned down by the late Government? Is it not the case that many hundreds of cases were considered by the late Government, although they had gone beyond the seven-years' limit?

Mr. ROBERTS said that it was true that numbers of cases had been considered.

Dr. VERNON DAVIES asked if the right hon. gentleman's reference to medical experts applied to London headquarters alone, or would the Provinces also be included?

Mr. ROBERTS: They will deal with all cases that are submitted.

Small-pox Concealment at Aden.

Mr. HOLFORD KNIGHT asked the Secretary of State for India whether his attention had been called to the sentence of three months' rigorous imprisonment passed on an Arab, Salem Mohamed Yaseen, at Aden, for concealing cases of small-pox; for what reason the Resident ordered the man's release after he had served five weeks of his sentence; whether he was aware that the objection of the Arabs and others in Aden to the notification of small-pox was due to the fact that the so-called contagious diseases hospital was a collection of huts several miles distant, that patients had to be carried on litters by human beings through the burning sun and with dust blown into mouths and eyes by the hot winds, and that subsequently it was decided that the penalty for breaches of the small-pox order should be a fine not exceeding 50 rupees; and whether he would make inquiries into the case of Salem Mohamed Yaseen, in view of the indignation of a large part of the Moslem community in Aden and district at the treatment he and others received at the hands of the medical officials during the recent small-pox scare at Aden.—Captain WEDGWOOD BENN replied: I have received communications on this subject from the Anti-Vaccination League, but have no other knowledge of the facts alleged. I have seen, however, a report by the Public Health Commissioner with the Government of India

on the outbreak of small-pox at Aden which assumed menacing proportions in March last, and in view of the very serious situation with which the authorities were faced, mainly through concealment of cases, I should not feel justified in questioning the measures they found necessary to deal with it.

Sun-bathing by the Serpentine.

Mr. SHAKESPEARE asked the First Commissioner of Works what progress he was making with sun-bathing facilities by the Serpentine.—Mr. LANSBURY replied: I propose to permit mixed bathing in the Serpentine next summer, but I do not at present contemplate making any special arrangements for sun-bathing.

Epizoötic Abortion Among Dairy Cattle.

Brigadier-General CLIFTON BROWN asked the Minister of Agriculture whether, in view of the serious losses suffered by milk farmers from epizoötic abortion, he would issue regulations to make it a notifiable disease; and whether research work was being carried out to find a cure for the prevention of this scourge. Mr. BUXTON replied: Epizoötic abortion differs from the diseases of animals which are scheduled, in that this disease may persist in a herd from three to seven years, or even longer, and, therefore, if it were made notifiable and the movement of animals on to and off of the infected farms controlled, stock-farming would be most difficult, and the cost of administering the order enormous. It is possible by means of a test, which is within the means of all stock-owners, to detect infected animals and protect healthy herds against disease. Research work on this subject is being conducted all over the world, and it is the policy of the Ministry of Agriculture to encourage research workers in this country to concentrate on a cheap means of immunisation.

Cases of Anthrax.

Mr. DUKES asked the Home Secretary the number of cases of anthrax infection reported to his department during the present year, giving the places where the disease was contracted and stating also the number of cases in which infection proved fatal.—Mr. CLYNES replied: The number of cases of anthrax reported during the present year in factories and workshops is 35, three of which were fatal. Cases were reported from Dewsbury, Earlsheaton, Heckmondwicke, Saltaire, Kidderminster, Liverpool, Kilmarnock, Chesham (Bucks), Stockport, Warrington, Runcorn, Bermondsey, Derby, Westbury (Wilts), Worcester, Somerset, and Leeds. In addition, four cases occurred among dock labourers, two of which were fatal. These were reported from Millwall Dock, London Dock, and Alexandra Dock, Liverpool.

Institutional Treatment of Ex-Service Men.

Mr. D. G. SOMERVILLE asked the Minister of Pensions how many disabled ex-Service men were still in institutions under his care; and whether he was satisfied that all possible steps were taken to alleviate the weariness of their protracted convalescence.—Mr. F. O. ROBERTS replied: Apart from cases of insanity in public mental hospitals, there are at present 4774 disabled ex-Service men receiving in-patient treatment at the cost of the Ministry. I am satisfied that everything possible is done to provide both interest and amusement for these cases, so far as the exigencies of treatment admit. Suitable occupation is provided in all cases where this is practicable, having regard to the fact that the majority of the cases in hospital are under treatment for less than six months. Outings and other entertainments are also arranged at all hospitals in coöperation with various voluntary associations.

A NEWCASTLE NURSES' HOME.—Sir Walter Runciman, who recently gave £50,000 to the Royal Victoria Infirmary at Newcastle-on-Tyne, last week laid the foundation-stone of the Runciman Wing of the nurses' home. The building will provide accommodation for 150 more nurses at a cost of about £45,000.

MARRIED WOMEN DOCTORS.—Considerable discussion has arisen in Birmingham in consequence of the intention of the Board of Management of the General Hospital to recommend the governors to declare married women ineligible for appointments on the medical staff, save in exceptional cases. The resolution of the board asks that "women members of the staff who marry during their term of office upon the medical staff be required to relinquish their position in view of the disorganisation of the work of the hospital which may be entailed owing to the demand of their domestic duties."

Medical News.

UNIVERSITY OF CAMBRIDGE.—On Nov. 15th the following degrees were conferred:—

M.D.—R. H. Metcalfe and H. R. Youngman.

M.B. & B.Chir.—G. C. Dewes, T. A. A. Hunter, T. S. Read, and J. L. Newman.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A meeting of the Council was held on Nov. 14th, with Lord Moynihan, the President, in the chair.

Diplomas of Membership were granted to 120 of the candidates whose names we gave on Nov. 9th as recipients of the L.R.C.P. (excepting C. S. Kah, E. H. Parkinson, M. E. Roberts, D. Sheehan, P. D. B. Spence, and F. R. Stansfield).

The Licence in Dental Surgery of the College was conferred on the following:—

C. S. Anderson, Richard Bayly, H. M. Bruce-Payne, Hyman Cohen, J. R. Cohen, A. F. De Villiers, W. H. Dodd, W. B. Earsdon, R. H. J. Fairney, W. F. H. Frost, Samuel Gorohovsky, H. L. T. J. Hardwick, F. H. Hughes-Jones, I. J. Immelman, H. G. L. Johnson, R. F. Johnson, W. B. Kilpatrick, E. J. F. King, Oliver Lyth, J. C. McNeill, C. E. Maguire, F. F. V. Manfield, H. H. Markovitch, M. E. Minton, C. A. Palk, W. C. Rae, Eric Schofield, Roy Scoggins, E. C. Shaw, W. H. H. R. Smithurst, R. W. Stevens, A. G. Taylor, W. R. Watts, R. J. Wheatley, A. H. V. Williams, I. C. Wilson, and C. J. Woodcock.

Mr. Victor Bonney was reappointed the representative of the College on the Central Council for District Nursing in London. Mr. V. Bonney and Mr. L. C. Rivett were appointed to give evidence on behalf of the College before the Maternal Mortality Committee appointed by the Ministry of Health.

It was decided to hold an evening reception on Thursday, May 29th, 1930, in connexion with the jubilee celebrations of the British Dental Association.

The President reported that he had received an offer from Mr. Louis Baron of a gift of £500 a year for a period of seven years for a research scholarship in the Royal College of Surgeons, to be called "The Bernhard Baron Scholarship." A resolution expressing gratitude was adopted.

A scheme was approved for granting the scholarships for medical students endowed by the late Mrs. Eliza Macloghin, and regulations were adopted. The approximate value of each scholarship will be £100 a year.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual dinner was held at the Piccadilly Hotel, London, on Nov. 14th, when Dr. J. J. Buchan, medical officer of health for Bradford, presided, and 160 covers were laid. Proposing the toast of "The Society," in the unavoidable absence of the Minister of Health, Sir Arthur Robinson, First Secretary to the Ministry (grand vizier instead of sultan, as he said), began by recalling what had happened since the Society was founded in 1856; the general health services built up since then were admittedly the first in the world, although it was peculiarly difficult to apply the principles of local government to a community like London which was as large as half a dozen nations. The lamented death of Sir John Gatti had delayed the issue of the report which would grapple with this situation. Especially on problems of nutrition had research made progress, but practice lagged far behind, and the Ministry had been called on to lend a hand. The Local Government Act of 1929 was now in being; since 1875 there had been nothing but piecemeal legislation, but the new Act remodelled every department of local government. The primary thing in it was that by next April the new authorities must make efficient arrangements to take over the work of the poor-law guardians who had been at their job for a hundred years. The Ministry had been criticised for not breaking up the poor-law at once, but the right way to set to work, said Sir Arthur, was not per saltum, but gradually, quietly, and in the end surely. Under the Act the control of the health services by the Ministry passed away. Comprehensive surveys of public health would be made in the areas (this was essential in view of the provision in the Act to reduce grants in case of default), and the whole of this information would be at the disposal of local authorities and their medical officers, the Ministry issuing periodic papers to sum up the results of their inquiry. This, he said, was the function of a central health department; not, as had been put to them, to issue "plain rules for plain people," but to ascertain facts, and leave voluntary societies and local authorities to popularise them. Under the Act there would be a resurvey of country areas, for until the areas were sound the functions of local government could not be properly distributed. The medical officer to the local authority must needs be an administrator, for he had to link up his

work with the rest of the municipal work; he had to frame a general policy in which health should play a leading part. The health authority was now put in charge of the whole of the health functions; time would show the vast importance of this step in its effect on administration and research. The institutional provision to be taken over from the guardians was variable in standard, from the type of the old poor-law infirmary to that of the first-rate hospital; in the hands of the local authority there would be a gradual tendency upward. This, it had been said, would be a threat to the voluntary hospitals; but take the example of Bradford where, in spite of the existence of the municipal hospital, the voluntary hospital was putting through an important scheme of extension. Medical officers must realise that they could learn a great deal from the voluntary hospitals; it was up to them to see that full use was made of them, so that there should be ample accommodation available in all areas. Until, said Sir Arthur, you got constant consultation between the local authority, the medical officer of health, and the voluntary hospitals, you would never get efficiency. Touching on the question of whole-time service, at the head there must of course be a whole-time administrator; how the principle worked out in the lower grades he would watch with interest. In conclusion, he announced the intention of the Minister of Health to introduce at an early date a Bill which would provide for the superannuation of all local government officers. Dr. Buchan, in responding, said the Society had the most earnest intention of carrying out the great work which had been initiated by the Ministry of Health; they appreciated fully the need for unification of the health services and for the unification of hospital work. His Society had already taken a large part in getting health maxims over to the people, but local differences made this harder in some places than in others. Prof. J. Johnstone Jervis, president of the Yorkshire Branch, proposing "The Guests," pictured with great humour the distressful situation of each body represented and their need for succour at the hands of his own Society. Fourfold response to this toast was made by the Bishop of Sodor and Man, Sir John Rose Bradford, Sir Robert Bolam, and Mr. J. H. Palin, M.P. Sir Robert remarked that medical officers of health had in the Local Government Act an unparalleled opportunity so to alter the minds of legislators as to make the work of the medical profession at large bear fruit. The toast of "The President," proposed by Alderman H. Thornton Pullan, J.P., chairman of the Bradford Health Committee, was accorded musical honours, and after responding Dr. Buchan called on Dr. R. A. Lyster to propose the toast of Mr. G. S. Elliston, Executive Secretary of the Society, who would be resigning that post next September after 11 years' service In his reply Mr. Elliston made it clear that his retirement from secretarial work was only a prelude to greater activity as a journalist in public health. During the evening Mr. Norman Williams delighted the company with his mellow voice.

ABERDEEN UNIVERSITY CLUB, LONDON. — The eighty-second half-yearly dinner of this club will be held at the Trocadero Restaurant on Thursday, Nov. 28th, under the chairmanship of Dr. T. Wardrop Griffith. The Secretary's address is 9, Addison-gardens, W. 14.

NO. 14 STATIONARY HOSPITAL.—The tenth annual dinner of the medical officers of this hospital will be held at the Trocadero Restaurant, Piccadilly-circus, London, W., on Friday, Dec. 6th. Colonel C. R. Evans will be in the chair. Members of the mess who have not received notice are asked to apply to the Secretary, Dr. H. L. Tidy, 39, Devonshire-place, W. 1.

BRITISH SERBIAN UNITS.—The annual reunion dinner of the British Serbian Units Branch of the British Legion and of all friends of Serbia will be held at the Grafton Hotel, Tottenham Court-road, London, W., on Saturday, Nov. 30th, at 7.15 P.M. Mr. Philip Mitchiner, F.R.C.S., will take the chair. Tickets may be had from Miss C. M. Marx, 24, Melcombe-court, Dorset-square, N.W. 1.

THE BRITISH INSTITUTE OF RADIOLOGY.—The annual conference of the British Institute of Radiology, with the accompanying exhibition, will be opened on Wednesday, December 4th, at the Central Hall, Westminster, by Mr. Arthur Greenwood, the Minister of Health. On Friday, December 6th, the annual dinner of the Institute will be held in the Trocadero Restaurant, Piccadilly, at 7.30 for 7.45 P.M.

DISEASE IN THE TROPICS.—Sir Leslie Wilson, late Governor of Bombay, will speak on the Hospital for Tropical Diseases in London and its Work for the Empire at a meeting at Mrs. F. S. Franklin's house, 44, Lancaster-gate, London, W., at 5 P.M., on Thursday, Nov. 28th. Admission is by invitation cards only, and they may be had from the resident Secretary of the Hospital for Tropical Diseases, Endsleigh-gardens, W.C. 1.

THE IVORY CROSS.—The fifteenth anniversary dinner of this Society will be held on Tuesday next, November 26th, at the Hyde Park Hotel, when the Duke of York will preside.

MERSEYSIDE HOSPITAL COUNCIL.—The report of the first year's working of the Merseyside Hospital Council states that there are already over 210,000 workmen employed in about 3000 business undertakings who are contributing an average of 7*s.* 6*d.* a year to the fund. Employers add one-third to their employees' contributions.

WILLIAM MACKENZIE MEDAL.—This medal "for original work in ophthalmology of outstanding merit," which has been awarded this year to Mr. W. S. Duke-Elder, is to be presented to him at the Glasgow Eye Infirmary at 8 P.M. on Monday, Dec. 2nd, when he will deliver an address on the Clinical Applications of the Newer Conceptions in the Physiology of the Eye.

BIRMINGHAM CHILDREN'S HOSPITAL.—Extensions to this institution opened last week increase the total accommodation to 230 beds. They comprise an isolation block, a new private ward for fee-paying cases, a medical ward, and extra facilities in the out-patients' department. The cost has been £25,000, and a babies' ward and a nurses' home have yet to be added. In the last 12 years the hospital has cost £160,000.

CREMATION IN MANCHESTER.—The number of cremations in Manchester has risen from 265 in 1925 to 436 in the 12 months ending with August. Since the crematorium opened the total number has been 5766. The national statistics of cremation also show an advance, the number for the 12 months ended on June 30th being 4195 as against 3266 in the preceding year. The total number recorded up to date is 46,509. There are now 18 crematoriums in this country, and another at Edinburgh has just been completed.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, Nov. 25th.—8 P.M., ODONTOLOGY. Paper: Mr. J. H. Badcock: The Design of Partial Dentures Considered in Relation to the Health of the Oral Tissues. Casual Communications:—Mr. F. St. J. Steadman: A Dentigerous Cyst in Connexion with a Supernumerary Incisor. Dr. E. W. Fish: A Report on Dr. Gottlieb's Histological Study of the Results of Traumatic Occlusion.
TUESDAY.—5 P.M., MEDICINE. Clinical Meeting at the London Hospital, E.
WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. The Improvement in the Public Milk-supply—Is Pasteurisation Necessary? Speakers: Mr. J. Menton and Mr. H. W. Steele-Bodger. Discussion: To be opened by Dr. R. Stenhouse Williams, followed by Dr. J. F. Halls Dally.
THURSDAY.—8.30 P.M., UROLOGY. Pathological Evening.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Nov. 25th.—8 P.M., Clinical Evening.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
THURSDAY, Nov. 28th.—8.30 P.M., Mr. F. Llewellyn Jones, M.P.: The League of Nations and the International Control of Dangerous Drugs. To be followed by a discussion.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Nov. 29th.—8.30 P.M., General Meeting. Papers will be read by Dr. N. L. Lloyd and Mr. V. E. Lloyd on Observations on the Urinary Excretion of Novarsenobillon in Syphilis and its Relation to Toxic Effects. A discussion will follow.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, Nov. 25th, to SATURDAY, Nov. 30th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Lecture by Mr. T. G. Stevens: Prolapse. No fee.—Tues., 8.30 P.M., Two lectures, especially suitable for M.R.C.P. candidates:—Dr. Kinnier Wilson: Encephalitis; Varieties; Relation to Fevers and Exanthems. Fri., 8.30 P.M., Dr. Kinnier Wilson: Disorders of Movement; Classifications; Pathogenesis. —VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W. Mon., 10 A.M., Demonstration by Mr. Denham Pinnock. No fee.—HAMPSTEAD GENERAL

HOSPITAL, Haverstock Hill, N.W. Thurs., 4.30 P.M., Demonstration on Spinal Manipulation by Dr. T. Marlin. No fee.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W. Second week of special course. All day.—ST. MARK'S HOSPITAL, City-road, E.C. All day course in Proctology.—Further information from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 25th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Wards.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw, Medical Out-patients. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. Dr. Scott Pinchin: Medical Out-patients.
THURSDAY.—11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.
SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.
Daily, 10 A.M. to 5 P.M., Medical, Surgical and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

SOUTH-WEST LONDON POST-GRADUATE SOCIETY, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Nov. 27th.—4 P.M., Mr. Maurice Whiting: The Ophthalmoscope in General Practice.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 25th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations. 4.30 P.M.: Demonstration on Practical Neurology by Dr. L. R. Yealland.

NATIONAL HOSPITAL, Queen-square.
MONDAY, Nov. 25th.—12 noon, Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Muscular Atrophies.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: Surgery of Compression Paraplegia.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Vascular Lesions of Nervous System.
FRIDAY.—12 noon, Dr. Purdon Martin: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Clinical lecture.

UNIVERSITY COLLEGE, Gower-street, W.C.
MONDAY, Nov. 25th.—2 P.M., Prof. Herbert Spencer: Medicine in the Days of Shakespeare. (Public Lecture.)

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 27th.—4.30 P.M., Mr. Frank Kidd: Radium for Malignant Disease of the Bladder.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.
MONDAY, Nov. 25th.—5 P.M., Mr. J. C. Dawes, M.I. Mech.E.: Disposal of Refuse.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road.
FRIDAY, Nov. 29th.—4 P.M., Mr. C. Gill Carey: Diagnosis of Sinusitis.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.
THURSDAY, Nov. 28th.—9 P.M., Dr. J. L. Livingstone: Some Points in the Treatment of Phthisis.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Nov. 26th.—3.15 P.M., Mr. G. G. Penman: Diseases of the Eye in Childhood.

PEOPLE'S LEAGUE OF HEALTH, 12, Stratford-place, W.
FRIDAY, Nov. 29th.—6 P.M. (at the Medical Society of London, 11, Chandos-street, W.), Dr. R. G. Gordon: What is the State Doing for the Individual and the Race, and How Much Efforts may be Amplified.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 27th.—4 P.M., Prof. S. L. Cummins: Some Aspects of the Tuberculosis Problem.

ANCOATS HOSPITAL, Mill-street, Manchester.
THURSDAY, Nov. 28th.—4.15 P.M., Dr. G. E. Birkett: General Principles of Radium Therapy.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, Nov. 29th.—3.30 P.M., Mr. Townrow: The Treatment of Acute and Subacute Media.

ST. MARY'S HOSPITALS, Whitworth-street, Manchester.
WEDNESDAY, Nov. 27th.—4.15 P.M., Mr. Comyns Berkeley: The Teaching of Midwifery. (Lloyd Roberts Lecture.)

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 26th.—4.15 P.M., Mr. J. Morley: Hydronephrosis.
FRIDAY.—4.15 P.M., Dr. H. Dove Cormac: Border-line Cases: the Physical Basis of Mental Disorder.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, Nov. 27th.—4.15 P.M. (in the Royal Maternity and Women's Hospital), Dr. A. N. McLellan: Demonstration of Obstetrical Cases.

Appointments.

BAINBRIDGE, W., M.B., Ch.B. Edin., D.P.H., has been appointed Honorary Ophthalmic Surgeon to the Hull Royal Infirmary.

CLAYE, A.M., M.D. Leeds, F.R.C.S. Eng., Honorary Assistant Surgeon to the Hospital for Women at Leeds.

GILL, J. W., M.B., Ch.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts for the Montrose District of the County of Angus.

RANDLE, A., M.D. Lond., Medical Superintendent of the Mile End Hospital.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital and Dispensary.—H.P. £140.
Birmingham City Babies' Hospital.—Res. M.O. At rate of £150.
Birmingham University.—Lecturer in Physiological Dept. £400.
Blackburn County Borough.—Asst. M.O.H., &c. £600.
Board of Education, Whitehall, S.W.—M.O. £776.
Bolton Infirmary and Dispensary.—H.S. £150. Also Asst. H.S. £100.
Brighton, Royal Sussex County Hospital.—H.S. £150. Also Cas. H.S. £120.
Brookfield Orthopædic Hospital, Hale End, Woodford Green.—Anæsthetist. 1 guinea per attendance.
Cairo, Egyptian University, Faculty of Medicine.—Two Surgical Tutors. £E35 monthly.
Cancer Hospital (Free), Fulham-road, S.W.—H.S. At rate of £100.
Cardiff, King Edward VII. Welsh National Memorial Association. Area Asst. Tuber. Physician. £600.
Cardiff Royal Infirmary.—H.S. Also Cas. Surg. O. At rate of £50 and £75 respectively.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. First Assists. for Out-patient Dept.
Charing Cross Hospital.—Surg. Reg. £150.
Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100. Also Registrar. £50.
Chester Royal Infirmary.—Two H.S.'s. Each £150.
Croydon General Hospital.—Cas. H.S. £125.
Dreadnought Hospital, Greenwich.—H.P. and H.S. At rate of £110.
Ealing Borough.—Asst. M.O.H. £600.
East Ham Memorial Hospital, Shrewsbury-road, E.—H.P. and Cas. O. At rate of £150.
East London Hospital for Children, &c., Shadwell, E.—Surgeon to Nose, Throat, and Ear Dept.
Essex County Sanatorium, Black Notley, near Braintree.—Res. M.O. £650.
Evelina Hospital for Children, Southwark, S.E.—Hon. Surgeon to Out-Patients. Also H.S. At rate of £120.
Freemasons' Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.P. At rate of £135.
Grosvenor Hospital for Women, Vincent-square, S.W.—Hon. Anæsthetist. Also Res. M.O. At rate of £100.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S. Also H.P. Each at rate of £100.
Hertford County Hospital.—Hon. Radiologist. Also Hon. Pathologist.
Heston and Isleworth Urban District Council.—Half-time Asst. M.O. At rate of £350.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £100. Also Part-time Jun. Cas. O. At rate of £150.
Huddersfield, Bradley Wood Sanatorium for Pulmonary and Surgical Tuberculosis.—Res. M.O. £500.
Hull Royal Infirmary.—Hon. Asst. Ophth. S.
Institute of Ray Therapy, 152, Camden-road, N.W.—Jun. M.O. At rate of £150.
Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150. Also H.P. and H.S. Each at rate of £120.
Leeds City.—Chief Asst. M.O.H. £900.
Lincoln, Bracebridge Mental Hospital.—Third Asst. M.O. £350.
London Hospital, E.—First Asst. and Reg. to two of the five Surgical Firms. £300.
London Lock Hospital, Dean-street and Harrow-road, W.—Second Anæsthetist. 1 guinea each attendance.
London University.—Geoffrey Duveen Travelling Studentship. £450.
Manchester Ancoats Hospital.—H.S. £100. Also Asst. M.O. for V.D. Clinics. 1 guinea per attendance.
Manchester, County Mental Hospital, Prestwich.—Asst. M.O. £500.
Manchester Northern Hospital for Women and Children, Cheetham Hill-road.—Sen. H.S. Also Jun. H.S. £130 and £100 respectively.

Manchester Royal Infirmary.—Res. M.O. £200. Asst. Res. Surg. O. At rate of £150. Asst. Surg. O. for Gynæcological Dept. £35. Also Asst. Surg. O. for Central Branch. £75.
Manchester, Salford Royal Hospital.—H.P. At rate of £125.
Metropolitan Ear, Nose and Throat Hospital, Fitzroy-square, W.—H.S. £150.
Miller General Hospital, Greenwich-road, S.E.—Hon. Med. O. for Electrical Dept. 20 guineas. Also Out-patient Officer at rate of £150.
Ministry of Health.—Five M.O.'s. Each £887.
Nairobi Municipal Council.—M.O.H. £1100.
National Hospital, Queen-square, W.C.—Res. M.O. £200.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Oxford City Council.—M.O.H., &c. £1100.
Poplar Hospital for Accidents, Poplar, E.—Hon. Visiting Surgeon.
Preston, Biddulph Grange Orthopædic Hospital.—Jun. H.S. At rate of £150.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Clin. Assts.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O. £200. H.P. and Cas. O. £150. Also Three H.S.'s. and One H.P. Each £120.
Radium Institute, Riding House-street, W.—H.S. £150.
Rochdale Infirmary and Dispensary.—Jun. H.S. £175.
Rochford, Poor-law Hospital.—Jun. Asst. M.O. At rate of £225.
Royal Air Force Medical Service.—M.O.'s.
St. George's Hospital, S.W.—Clin. Asst. in Physio-therapy Dept.
St. Mary's Hospital, W.—Med. Reg. to Out-patients. £200.
St. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C.—Clin. Assts.
St. Thomas's Hospital, S.E.—Two Surg. Reg.'s. Also Med. Reg. for Children's Dept. Each £250.
Sidcup, Greenwich and Deptford Children's Homes.—Dentist. £74.
South Shields, Ingham Infirmary.—Jun. H.S. £150.
Surrey County Council.—Asst. M.O. £600.
Tilbury Hospital, Essex.—Med. Supt. £250. Also H.S. At rate of £150.
University College Hospital, Gower-street, W.C.—Ophth. Reg. £50. Also Hon. Dental Surg.
Wallasey, Victoria Central Hospital.—Jun. H.S. At rate of £100
Walsall General Hospital.—H.S. At rate of £150.
West Bromwich, Hallam Hospital.—Res. H.S. and Res. H.P. Each £250.
Western Australia, Lunacy Department.—Jun. Asst. Res. M.O. £456.
West London Hospital, Hammersmith-road, W.—H.P., H.S. Aural and Ophth. H.S. and Asst. Cas. O. Each at rate of £100.
Wolverhampton, Royal Hospital.—Asst. Pathologist and Pathological Reg. £350.
The Chief Insector of Factories announces vacant appointments for Certifying Factory Surgeons at Swindon (Wilts.) and Berkhamsted (Herts).

Births, Marriages, and Deaths.

BIRTHS.

DAVIDSON.—On Nov. 8th, at Square House, Christchurch, Hants, the wife of Dr. A. Whyte Davidson, of a daughter.
EARP.—On Oct. 30th, at the Presbyterian Hospital, Denver, Colorado, U.S.A., the wife of Dr. J. Rosslyn Earp, of a son.
GABB.—On Nov. 16th, at Copthorne, Guildford, the wife of Dr. Harold Gabb, M.C., of a daughter.
PATTERSON.—On Nov. 16th, at Plas-yn-dre, Ruthin, the wife of S. W. Patterson, M.D., of a daughter.
ROFFEY.—On Nov. 16th, in London, the wife of Dr. Bernard W. Roffey, of Gillingham, Kent, of a daughter.

MARRIAGES.

BROWN—CORY.—On Nov. 9th, at Christ Church, Montreux, Surgeon-Commander Robin Brown, Royal Navy, to Dorothea Grace Cory.
TOM—EADIE.—On Nov. 11th, at Northleach Parish Church, Dr. Arthur Tom, of Bellevue House, Cheltenham, to Marjorie, daughter of Mr. and Mrs. H. G. Eadie, Charlton Park Gate, Cheltenham.

DEATHS.

CLARKE.—On Nov. 16th, at "Netherleigh," Thorne-road, Doncaster (very suddenly), Henry Joy Clarke, M.D., J.P., aged 72.
FALKINER.—On Oct. 30th, at Dublin, Ninial McIntire Falkiner, M.D., F.R.C.P.I., late of Tyrone.
FORBES.—On Nov. 14th, at Sierre, Switzerland, Dorothea Christine Forbes, M.R.C.S., L.R.C.P., D.P.H., younger daughter of the late George Forbes, M.D., Blackpool, aged 32.
HACKETT-WILKINS.—On Nov. 15th, at Mongeham Lodge, Great Mongeham (near Deal), Colonel Thomas James Hackett-Wilkins, O.B.E., I.M.S. (retired).
MELLAND.—On Nov. 14th, after a brief illness, Brian Melland, M.D., of The Bower, Ashley-road, Altrincham, in his 66th year.
OPENSHAW.—On Nov. 17th, at a nursing home, after a few weeks' illness, Thomas Horrocks Openshaw, C.B., C.M.G., F.R.C.S., of Wimpole-street, W., aged 73.
REID.—On Nov. 18th, at Southsea, Sir Archdall O'Brien Reid, K.B.E., M.D., F.R.S.E., aged 69.
SHAW—On Nov. 11th, at London-road, St. Leonards-on-Sea, Frank Herbert Shaw, M.R.C.S., F.R.C.P.
SHOVE.—On Nov. 16th, at Upper Richmond-road, Putney, S.W., Edith Shove, M.B., aged 81.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE MANAGEMENT OF PATIENTS SUFFERING FROM CANCER OF THE BREAST.*

BY F. HERNAMAN-JOHNSON, M.D. ABERD., D.M.R.E.,
RADIOLOGIST TO THE FRENCH HOSPITAL, LONDON; PHYSICIAN IN CHARGE, X RAY AND ACTINOTHERAPEUTIC DEPARTMENT, CROYDON GENERAL HOSPITAL.

THE management of patients suffering from cancer of the breast begins in the general practitioner's consulting-room. Every patient who consults her doctor because of trouble in her breast is a possible subject of cancer. The first duty of the doctor is to differentiate, where possible, between the real and the imaginary—between that which has an existence in the external world and that which has its being only in the mind of the patient. Cancer-phobia is a complaint calling for sympathy and tactful handling; otherwise, the mental state of its victim may be worse than that of the patient suffering from the disease itself. A witty friend of mine, asked if cancer was a curable disease, replied: "Of course it is; I have been cured of it myself hundreds of times!" Indeed, there are few of us who have reached middle age who have not been cured of it at least once or twice. For cancer-phobia is an almost universal complaint, though fortunately in most cases the attacks are infrequent and fleeting.

When a patient presents herself complaining of vague pains in the breast and nothing whatever can be found on physical examination, she should be questioned carefully about trauma. If nothing definite can be elicited, it is justifiable to ask her point blank what she fears and why. Generally it will be found that she has recently been in contact with some friend or relative who has cancer, or has been reading literature on the subject. Such patients require the most vigorous reassurance. It should be explained to them that pain is not an early sign of cancer. But it must be remembered that the patient has felt pain—or if one likes to go into fine-spun distinctions—believes that she has felt pain—and requires an explanation. The blessed word "neuralgia," talk about being "run down," and the prescription of a tonic are usually all that is required to make her happy. The doctor should never let her get the idea that he thinks her fussy. Some day she may have real trouble in her breast and nothing should be done which would make her hesitate to consult him a second time.

Even when the breast is absolutely normal to palpation, there are two things which should suggest that an eye should be kept on the patient. If there is a definite history of injury, even years before, caution is necessary; and when there is a pronounced family history of cancer the chances of an individual member developing it are greatly increased.

Next comes the patient with the suggestion of a vague "fullness," scarcely to be called a "mass," somewhere in the breast. If there is tenderness, it is permissible to regard this provisionally as mastitis. Many such cases yield to X rays in small doses, and no more is heard of the trouble. But if any signs or symptoms persist after a few weeks of treatment diagnosis becomes urgent. There is only one certain means, and that is the surgical removal of a section for microscopic examination. To be really effective, and more especially to establish a negative diagnosis, this must be done at leisure; a frozen section at the time of operation is not enough. This again means an interval of days, and some surgeons—notably those of the New York Memorial Hospital—are insistent that such an interval is dangerous, as the exploratory section leads to dissemination. Their view is perhaps extreme, but I am myself terribly frightened of disturbing a malignant growth by surgical trauma, however slight, as I have seen tragedies follow. All risk from the incision can, however, be avoided by using a recently introduced form of diathermic knife which seals the tissues as it passes through them but with a layer of coagulation so thin that healing by first intention is not interfered with. If the incision is large enough to require stitching there is again an element of risk. It should not be difficult to devise a diathermic needle which could sterilise its own track before the suture is pulled through. When such technique is not available, X rays should be administered both before the exploration and in the interval between this and total removal, should it prove necessary.

If a single well-defined lump is felt, no matter how small, it should be remembered that statistics tell us that the chances are at least two to one that it is cancer. It may, of

* Being the substance of an address delivered at the British Institute of Radiology under the auspices of the Fellowship of Medicine and Post-Graduate Medical Association.

course, be an area of mastitis, or an innocent cyst, or more rarely a deep abscess or a gumma. In the latter events, the history should help; but, in general, the only certain means of diagnosis is an exploratory section.

Established Carcinoma.

When the clinical evidence has been so vague that not even a provisional opinion could be formed apart from microscopic observation, radical operation must, in the present state of our knowledge, be unhesitatingly recommended. The surgeons of the New York Memorial Hospital claim 80 per cent. of successes under such circumstances, provided operation follows immediately on exploration. This estimate may be unduly optimistic, but the practitioner needs a guide of some sort and had better assume the claim to be justified unless and until it is disproved. Where a definite lump is found and proves to be malignant, the results of surgery are most unsatisfactory. Only about 30 per cent. of all those operated upon will be found alive and well three years later. When we remember that the average duration of life in untreated cancer of the breast has been worked out as between three and four years, the value of operation under such circumstances appears even less than the figures at first sight suggest, especially as many of the so-called three-year cures will go to pieces before another three years have elapsed. The fact remains, however, that a few patients out of every hundred will live 10, 15, or 20 years without further trouble, and that of those who die many succumb to more or less painless internal metastases.

X rays have been tried on the continent as an alternative to operation in so-called early cases. The results, while perhaps not much worse than those of operation, have not been encouraging, except in elderly people. I have myself had five patients who refused operation or for various reasons were not considered fit for it. In three of these the primary growth disappeared but the patients died from internal metastases in from two to three years. In the fourth the tumour, after disappearing for two years, recurred at its original site and a radical operation was performed. The patient was free for a year, spent another year during which extensive recurrence in the skin was kept at bay by X rays and light, and is now dying of internal metastases. These patients were all between 40 and 50 years of age. On the other hand, patients well into their seventh decade as a rule do well on X rays, which may either cause all visible tumours to disappear or, at any rate, slow down their growth almost to vanishing point. Individual nodules which are resistant should be surgically removed, but radical operation is not justifiable.

The woman between 40 and 50 who has a small lump, newly discovered, in which the clinical probabilities are two to one in favour of malignancy should not be entrusted to surgery alone, for the chances are again two to one against her being alive and well in three years. Surgery, combined with X rays, offers more hope. A short course of X rays before operation will reduce the vitality of the cancer cells and make them less likely to disseminate successfully as a result of operative interference. Then, when the wound has healed, courses of prophylactic X rays from time to time will help to stave off recurrences. It is naturally impossible in a particular case of non-recurrence, say five years after an operation, to be sure that prophylactic X rays have been of benefit, for the patient might have survived as the result of operation alone. We can form an idea of the efficacy or otherwise of the treatment only by the collection and study of statistics, or by interpolating, as the logicians say, the results obtained when actual recurrence has occurred before X rays are administered. It is sometimes stated that a large number of cases healed by operation alone should be compared with an equal number treated by surgery plus X rays. Such statistics are almost impossible to collect and fortunately are not necessary. It is admitted on all sides that, where a definite lump is present at the time of operation, 60 to 70 per cent. of the patients will be dead within three years. Therefore, to show the value of prophylaxis, all that is called for is proof of a definitely higher survival-rate amongst those treated by pre- and post-operative X rays. Such a collection of statistics is not beyond the capacity of a single X ray department but is a labour of years, and meanwhile one must fall back upon indirect arguments. No one disputes that X rays can often banish all external signs of cancer of the breast, and as any recurrence must have a microscopic beginning, it is only reasonable to suppose that in many cases X rays hinder the development of metastases. The prophylactic use of X rays from time to time over a period of years rests upon a basis of argument quite as rational as that which supports the use of salvarsan or quinine in the quiescent stage of syphilis or malaria. The reasons which can be advanced for the use of radiation are indeed stronger than those for the use of these drugs. Both arsenic and quinine are poisons and, when used for purely precautionary reasons, sometimes upset a person previously in good health. It may be replied that X rays can also cause severe constitutional disturbance, but this is not true for properly administered prophylactic doses. Small doses administered two or three times a week for some weeks leave the patient at the end of a course feeling stronger and better than at the beginning. If treatment by ultra-violet light be added the good effect upon the general health is still more marked. Should a patient complain of feeling exhausted after a course of prophylactic rays, she has been overdosed.

Unless it should come about in future that all women submit themselves to frequent routine examination of the breasts, I fear that the bulk of cancer cases will continue to fall into the group we have been discussing—viz., when the first intimation either to the patient or her medical adviser is the discovery of a definite tumour. In most cases the patient discovers the lump by accident—the exception being the traumatic case. At present, the advice to give such patients is: preoperative raying, radical removal, and prophylactic courses for some years. But this advice may become obsolete very shortly. Mr. Stanford Cade, of the Westminster Hospital, has boldly attempted radical cure by radium in operable cases. The technique consists in the insertion of radium needles—containing element, not emanation—into the tumour, and also in the form of a barrage in the axilla, supraclavicular region, and other areas. The immediate results have been good and the patient avoids mutilation and operative shock; if even 30 per cent. of such cases are alive and well in three years' time, operative removal will no longer be justifiable as a routine measure.

Trauma.

In an experience of 20 years I have been greatly struck by the number of cases in which there is a history of definite trauma. I do not mean the vague kind of story in which the patient thinks she may have injured the breast at some more or less remote period. I refer to injuries which have caused pain and swelling so severe as to impress themselves upon the memory. A blow from a tennis-ball, from the side of a swing door, or from falling in a bath are common examples. The interval between the blow and the discovery of a carcinomatous nodule may be months or years, but it will generally be found that the breast has never been quite comfortable in the meantime. A typical sequence is for most of the symptoms to disappear but a small hard mass to remain; this should be described as tender rather than painful, as it may cause no inconvenience unless accidentally knocked or deliberately palpated. If it is removed surgically within a few months of the accident, the pathological report is nearly always one of chronic inflammation only, but to continue to harbour such a nodule is about as dangerous as going about with a percussion bomb in the waistcoat pocket. The thing may never go off but an unlucky jolt will explode it and the bearer is hardly a good insurance risk. So the tender persistent nodule of traumatic mastitis, once thoroughly established, is resistant to all non-surgical forms of treatment and should be excised without delay.

Though it cannot be cured without operation, I believe that its formation can often be prevented by suitable physical treatment at the time of the injury. A 3000 candle-power radiant heat lamp will relieve the acute pain and swelling almost at once. After a day or two a mild galvanic current should be passed through the seat of the injury. Small doses of X rays may be commenced in about a week and continued for some time. If, in spite of such treatment, there is still a definite tender nodule after six weeks, the case causes anxiety, and if no marked improvement occurs during the next month, excision should be considered.

Some years ago two patients were referred to me, each suffering from a contusion of the right breast. They worked in the same office and each sustained a blow from a door which, unknown to them, had been fitted with a powerful spring. I did not see them until three weeks after the accident; both showed an inflammatory mass the size of a small orange. One of them, a married woman of 35, did not make much progress, and was operated upon within two months. The other, a girl of 26, was successfully treated by X rays, though the lump took three months to disappear. It is more than likely that if the elder patient had had physical treatment from the very start her operation would have been avoided.

I want to emphasise most strongly that blows on the female breast are very dangerous; that when seen early they call for the utmost care and skill in their treatment; that such skill and care is often rewarded by a complete restitution to normal; and that in case of failure surgery should be resorted to without delay.

Recurrence.

First of all, recurrence is by no means a death warrant. There are plenty of instances on record, even before the era of X rays and radium, of patients being comfortable for a decade or more despite operation every two or three years for the removal of various recurrent growths. Nowadays operation under such circumstances is seldom necessary. Small nodules in the skin, if seen early, should cause little

anxiety. They almost always disappear under X rays or radium. Large nodules sometimes prove refractory and require surgical removal, but it is probable that a freer use of radium would, even in such cases, render operation very seldom necessary. For widespread simultaneous invasion of the skin, with a tendency to ulceration, we must resort to X rays combined with light. This, the most distressing form of recurrence, will often prove largely intractable—but at the worst it is generally possible to keep the patient from becoming the mass of stinking sores which would formerly have been her fate. Radiation, while it may not cure, does have an inhibiting effect upon putrefaction even in the worst cases.

The patient with inoperable recurrence in the cervical glands may present a serious problem, as they are apt to cause great pain. Such patients are often very low in vitality and spirits, and respond poorly, or even adversely, to X ray treatment. I have found from experience that the best thing to do is to put them on a course of ultra-violet light. This usually has a remarkable effect upon their health, weight, and spirits, and enables them to profit by deep X rays to the glands at a later date. There is no doubt in my mind that in some instances patients of this type may be literally snatched back from the edge of the grave by treatment with ultra-violet light. Nor is the effect merely evanescent. It may, to my personal knowledge, prolong life for two years or more. This experience is also that of workers in the light and X ray departments of the Cancer Hospital.

I have known deep X rays in large doses relieve the swollen arm due to axillary recurrences. In its worst form it is a dreadful affliction. Amputation of the fore-quarter has been proposed for it and once or twice carried out. It is admittedly a desperate remedy, but in a really bad case in a relative of my own I feel sure that I should have it carried out if I could find a surgeon to do it. Internal metastases—in the lungs, mediastinum, or liver—defy radiation, but whenever there is pain it should be tried for its sedative effect. Metastasis in bone is a field in which deep or high-voltage therapy gives results which cannot be obtained by less penetrating rays. It is frequently possible to cause the regression of a particular growth of bone, though of course multiple metastases will conquer in the end. Metastatic deposits in the spine frequently cause severe and intractable pain. Deep X rays may relieve this to some extent, but the difficulty is that patients so affected are usually too ill to be brought for X ray treatment.

The Hopeless Case.

As the story of the cancer patient begins with the general practitioner who makes the diagnosis so, as a rule, it ends with him in sole attendance. But his final task, painful though it often is, has been immensely lightened by the aid of the radiologist. When I was in general practice I was seldom without at least one patient dying of cancer. The reason was not the abnormal size of my practice but the length of time these unfortunate patients took to die. Often the whole house was permeated with the smell of them and the odour seemed positively to rush out into the street at once when the front door was opened. Yet they lived for months, a terrible burden to themselves, their families, and their medical attendants. One of the greatest contributions of radiotherapy to medicine has been that such patients are now for the most part kept on their feet, physically unobjectionable, until within a few weeks of the end. Still, there does inevitably come a time when the patient can no longer struggle out to attend for X ray treatment. It is wise to forestall this time when one sees it approaching by suggesting a rest. This course is far sounder from a psychological point of view than to wait until the patient herself feels that she can no longer make the effort. To allow her to come to this point is, as a rule, to make her abandon hope, whereas to hold out the prospect of a later return for treatment avoids any abrupt realisation.

When the patient is finally bedridden morphia should certainly not be withheld, but it may be desirable at first to give it by the mouth only and to camouflage it as a tonic. Sometimes heroin causes less general disturbance. I think it is cruel to force highly concentrated nourishment upon these patients against their will, or, at any rate, in the absence of any desire. Under such circumstances the only thing the patient really craves is a little water; this is no doubt nature's way of hastening dissolution.

One drug should certainly be avoided for patients in extremis, even those who, while they have not actually reached this stage, are obviously not far from it. That drug is lead. I say this not because I think that lead has no effect in inhibiting the growth of cancer. Sometimes it has such an effect, and that is why in the moribund case it may delay the final exit. But the risk is, in my experience, that, while life is prolonged, pain is increased. I can express no opinion as to the general value of lead in cancer, but if it is tried at all let it be on those whose general health is good, so that the drug may work in conjunction with the patient's power of resistance. That the body offers a resistance to the spread of cancer can scarcely be doubted, and that the resistance may suddenly give way is a matter of clinical observation. Salvarsan and quinine, both at first thought to be specific remedies acting directly on the respective organisms of syphilis and malaria, have been shown to require the coöperation of the body cells in order to effect their purpose. We may be sure that any beneficial action of lead must presuppose reactive power in the system, and its ultimate success cannot be looked for when there is already extreme exhaustion.

General Care.

This is a matter which almost exclusively concerns the family doctor. Is the patient to be told the nature of her complaint? Some years ago it was customary in most cases to conceal the truth; whereas in men suffering from malignant disease, frankness has always been the rule rather than the exception. But times have changed; women have taken their place beside men in almost all the business of life, and there would seem to be no further justification for withholding disturbing knowledge simply because of the patient's sex. Some women would go utterly to pieces if they knew they had cancer, but so would some men. Each case must be judged on its merits. In most instances it is desirable that the patient should know what is the matter. How else can we secure her intelligent coöperation in her after-treatment? It is, fortunately, not necessary that the word cancer should even be mentioned. It is possible to establish a perfect understanding between doctor and patient without any definite statement. When a complete removal of the breast is recommended, most women know, or at least strongly suspect, what this means. It is a mistake to give any patient an opening to ask forthwith "is it cancer?" The advice as to operative removal should be coupled with a statement that it will be necessary for some time afterwards to employ X rays at intervals, in order to avoid any risk of return. This suggestion of the possibility of recurrence is in nine times out of ten sufficient to stop the patient from asking a direct question; at the same time, she is comforted by the thought that something will be done to forestall what she dreads. A question as to whether X rays will make certain that there will be no further trouble is not often asked. If it is, I think the practitioner is justified in being very reassuring. At the worst there is one chance in three that she will be alive and well in three years' time, and with proper post-operative treatment my belief is that the odds against survival are reduced to 50 per cent. This is the scientific forecast based on statistics, but the general practitioner is dealing with an individual, and the mental attitude of that individual to her trouble is going to have an effect upon the survival prospects in her particular case. Recurrence in cancer depends not only upon the malignancy of the growth but upon the patient's resistance to it. It matters little what view we take of the essential nature of neoplasms—whether we regard them as analogous to the manifestation of syphilis or tubercle—or look upon them as collections of atavistic cells which have revolted from civilised restraint and determined to indulge in a primeval orgy of reproduction. In either case the tumour cells do not have it all their own way. Pathology tells us that local barriers of fibrous tissue are set up, and clinical observation makes it abundantly clear that general resistance may suddenly fail, with dramatic consequences. A patient who has been going along, perhaps for years, without much change, fails to appear at the clinic. The next day a letter arrives from a relative to say that "Mrs. So-and-So seems to have gone all to pieces in the last week," and in a few days she may be dead. Sometimes, if there is a little warning, the resistance may be restored for a time by purely constitutional means, such as treatment of the whole body by light. Or the re-energising process may be a purely mental one—as when a patient hears that a much-thought of son or daughter is travelling half across the world to see her. Under such circumstances I have seen patients revive in a most extraordinary way, and sometimes survive for months, or even a year or two, when it had seemed to all that the end was approaching. The converse of this is also seen: a patient doing well receives a shock, or undergoes a period of some anxiety, and breakdown occurs. The importance of mental attitude must therefore be fully recognised, and it is not only justifiable but obligatory upon us, while admitting by implication the nature of the disease, to take an optimistic view of the prospect of cure.

Fifty years ago to tell a patient that he had consumption was regarded as a death sentence. Only yesterday I had in my consulting room a man, 60 years of age, who told me that when in his twenties he had had, while out shooting, a sudden attack of pulmonary hæmorrhage. Two of his brothers had died of consumption, and he immediately contemplated using his gun on himself. On second thoughts, however, he decided that it would cause less disturbance if he merely ran full

speed up a neighbouring hill. This he did, firmly believing that this violence would produce a fatal rupture; he arrived panting at the top, but the expected flood did not come. It was just at the beginning of the fresh-air cure era. The young man looked around, saw that the prospect was fair, and decided to build himself a hut on the hill top. He did so, lived in it for a year, and has never shown any signs of the disease since. The mention of lung tubercle does not now produce a feeling of despair, though many still die from it. Instead of side-stepping the issue with cancer patients, it would be far better to try to strip the disease of the worst of its terrors. Judged by relative standards, cancer is not among the worst of maladies. Under modern conditions, it is, as a rule, comparatively merciful. Rheumatoid arthritis in its worst forms, tuberculosis, actinomycosis, osteomyelitis, and chronic progressive disease of the nervous system may all be far worse afflictions, yet their names do not inspire the same dread. Many, even in the medical profession itself, are inclined to indulge in a kind of devil-worship, shaking their heads and chanting the words "the cause will never be discovered, and there is no cure," as if they were an invocation. Let us turn our backs on superstition. So long as there is no visible recurrence, the purely precautionary nature of X rays or other treatment should be emphasised. If recurrence actually occurs, it should be made light of and its purely local nature insisted on. If small recurrences are dealt with effectively by radiation, it is astounding to see how little the patient comes to fear them. Faith in the treatment, once established, is fortunately hard to shake. But if misfortune decrees that intractable external lesions become established before internal ones have had time to do their work, the process is usually so prolonged that patients have time to accustom themselves to the idea that they will never be really cured, and for the most part do not trouble the doctor with embarrassing questions. If they do ask, it is no use promising a cure for what is obviously getting worse in spite of treatment.

It is generally admitted that nearly all patients who have had cancer of the breast will show a recurrence if they live long enough. I have myself seen this happen after more than 20 years of freedom. Unless we are to regard such manifestation as cancer de novo, we must assume that malignant cells can lie dormant literally for decades. This means that every patient should be regarded as holding metastases at bay by reason of her natural powers of resistance. Therefore all the recognised means of maintaining good general health should be employed—fresh air, food containing a due supply of vitamins, suitable clothing, exercise, and rest and change when necessary. One must avoid making such patients think they are invalids, but tasks involving excessive strain or worry should not be deliberately entered upon.

Eight Points.

(1) Indefinite resistance or fullness which is not tender calls for exploratory section.

(2) Such exploration is dangerous unless performed with a special diathermy knife, or else preceded and followed by X rays.

(3) Mastitis showing a typical clinical picture may be treated for some weeks by X rays, to see if it subsides.

(4) In the majority of cases, the patient finds a nodule by accident while washing. Of such cases treated by surgery alone, two out of three will be dead in three years, certainly in five.

(5) Pre- and post-operative X rays and light treatment greatly reduce the percentage of external recurrences, and in many instances prolong life.

(6) Operation plus X rays is at present the treatment of choice, but it is possible that in the near future radium will oust surgery as routine treatment.

(7) Trauma is of great importance in the ætiology of breast cancer. Physiotherapeutic treatment at an early stage will reduce the risk of subsequent malignant change.

(8) The successful treatment of patients suffering from carcinoma mammæ is largely concerned with maintaining their resistance to latent foci of the disease. In maintaining the resistance, mental health is as essential as that of the body.

PUBLIC HEALTH IN GIBRALTAR.

ACCORDING to the annual general report for 1928, now issued from the Colonial Office, the estimated total population of Gibraltar at the close of the year was 16,281, of whom 15,719 are fixed residents. These figures represent the population between sunset and sunrise, but some 4500 aliens and 1500 British subjects resident in the neighbouring Spanish town of La Linea come into Gibraltar daily. The number of births during the year was 366, of which 212 were boys and 154 girls. The birth-rate per 1000 was 23·28. The births refer to the fixed population only, as under the Aliens Order in Council no alien may give birth in the Colony. 293 deaths were registered, and the crude death-rate was 17·40 per 1000. Infantile mortality was 122·9 per 1000. Deaths from pulmonary tuberculosis were 1·6 per 1000; 21 persons died from cancer. The general health of Gibraltar continued to be good. The vital statistics are considered satisfactory, and with regard to infectious disease there is nothing of outstanding importance to record, except an outbreak of measles, of which 961 cases were reported, 11 being fatal. The epidemic was of a mild nature, and complications were rare. The sanitary work of the Colony is carried out by the city council, who also have charge of the roads, lighting, water-supply, and hygienic measures in dwellings. A new Ordinance has been enacted to bring local legislation up to the standard required by the International Convention relating to Dangerous Drugs.

The general climate of Gibraltar is mild and temperate, though somewhat hot and oppressive during the months of July and August. The meteorological record for 1928 shows 69·5° F. as the mean maximum temperature, the highest shade temperature being 99·0° F. on July 27th, and the lowest 42° F. on Jan. 1st. The rainy season is spread over the period from September to May; the annual average rainfall is 35 inches, but in 1928 only 25·44 inches were registered, of which 7·06 inches fell in November.

The tourist traffic again showed a slight increase. Various improvements are being carried out which will make it possible for tourists to visit the three principal sights of Gibraltar—the Galleries, the Water Works, and the Moorish Castle—in greater comfort and in shorter time than has hitherto been required. It is also hoped that a first-class hotel will be erected in the near future.

AN AMERICAN INVESTIGATION OF CONTRACEPTION.

THE Holland Rantos Company, dealers in obstetrical and gynæcological materials, 156, Fifth-avenue, New York City, has made a statistical investigation of the efficacy of the contraceptive technique, which it recommends. This consists of the routine combination of an occlusive device, a spermaticide, and a douche. The Rantos type of occlusive pessary resembles the familiar Mensinga type, except that the Rantos has a spiral spring in the rim in the place of the watchspring which maintains the shape of the Mensinga. The spermaticide is a lactic acid-jelly combination, with the trade-name of Koromex. It is put up in a collapsible tube, to the screw nozzle of which a cannula is attachable. The jelly is smeared round the rim of the pessary, and is expressed upon the rubber dome of the pessary, which is worn convexity upwards, from the collapsible tube. The pessary requires to be fitted by a doctor. The Company sent out 2300 questionaires, and received 726 replies. These showed that the combined method of diaphragm and spermaticide gave a satisfactory result in 90 per cent. of all cases. In the hands of specialists in contraception, the percentage of success is claimed to be as high as 97 or 98 per cent. Satisfactory results were recorded with the spermaticide alone in 66·8 per cent. of cases.

RICKMAN'S SECOND SERIES OF EIGHTEENTH CENTURY POPULATION FIGURES.

Two years ago we noticed a book by Mr. G. Talbot Griffiths entitled "Population Problems of the Age of Malthus." Since this date there has come to light in the General Register Office a bound volume of manuscript notes and workings from which the estimates for the pre-census populations were derived. Some of the implications of these notes are discussed in a paper by Mr. Griffiths that has appeared in the *Journal of the Statistical Society* (Vol. XCII., Part 2, 1929). They have an important bearing upon the comparative reliability of Rickman's first and second series of calculations of the pre-census population of England and Wales, appearing respectively in 1801 and in 1841. It has generally been assumed that of these two series the later was the more reliable. Mr. Griffiths's chief aim in his paper is to show that, in fact, the data from which the 1801 series was calculated were more reliable than those that formed the basis of the 1841 series.

ANOTHER LOCAL ANÆSTHETIC.

WE published last week a note under this heading which referred to a drug shortly to be placed on the market by the Clayton Aniline Company, Limited, under the name of Percain. A further reference to it will be found in our Vienna letter this week. The company informs us that the drug is being tried in certain metropolitan hospitals and privately, and can be obtained from their pharmaceutical department at 40, Southwark-street, London, S.E.

QUEEN ALEXANDRA MILITARY HOSPITAL, MILLBANK. The Prince of Wales will open the new wing of this hospital on Nov. 26th at 12 noon. Application for tickets should be made to the Commanding Officer of the hospital.

An Address

ON

PSYCHOLOGY AND MEDICINE.

Given to the Medical Section of the British Psychological Society on Oct. 23rd, 1929,

BY HENRY YELLOWLEES, M.D. GLASG., F.R.C.P. EDIN., D.P.M.,

PHYSICIAN AND LECTURER IN PSYCHOLOGICAL MEDICINE TO ST. THOMAS'S HOSPITAL.

IN the closing pages of his text-book William James stated that Psychology was not a science; that it was only the hope of a science, and that it was waiting for some one who would be to it what Lavoisier was to chemistry, and what Galileo was to physics. He added that when such a person arose the necessities of the case would make him a metaphysicist. Such a person has now arisen, and the revolution which James foresaw has taken place. Few will deny that Freud has been to psychology all that Darwin was to biology and that Newton was to mathematics, and more. That is my personal view, and I hold it sincerely. The necessities of the case, however, have not succeeded in making Freud a metaphysicist, though they have gone some distance towards accomplishing that feat with Jung. Apart from this one point James's prophecy has been wonderfully fulfilled.

PSYCHOLOGY AND SCIENCE.

Freud has lifted from psychology for ever the reproach of being only the hope of a science. In spite of the stupendous difficulties in the way of collecting data, and of the unusual and elusive nature of the data when found, he has triumphantly brought order out of chaos by applying the methods and the spirit of science to the deepest and most secret workings of the mind. We may ignore the debatable fringe which is inevitable in every great scientific advance, and is merely the crest of foam which the wave may carry along with it or may leave behind. The fact remains that he has reduced psychology to a system of tested and proven theories which can be applied with helpful and illuminating result to practically every department of human activity.

It is not unfair to say that this system claims to be the only system of truly scientific and practical psychology. It certainly realises and states that it is incompatible with any other. I propose therefore to deal almost entirely with it in what I have to say. I have called this paper Psychology and Medicine, but you will understand that when I use the word "psychology" it is the doctrines, the methods, and the view-point of psycho-analysis that I have in mind. It is with the application of scientific psychology to medicine that we are now concerned, and we may look for a moment in passing at the question: Who is to do the applying?

I need not remind you that new scientific knowledge, once given to the world, becomes the common property of all interested and intelligent people. A very short course of instruction will enable any average student to know more about antisepsis than Lister, and more about political economy than Adam Smith. Each generation begins where its predecessors left off, and the discoveries of a great mind, once added to the stock of human knowledge, become the current coin and the commonplaces of lesser minds who would never have had the genius to make them, and may not have the ability fully to understand or apply them.

This process is well illustrated in the case of psychology. The main outlines of Freud's methods, and the more general and simple of his conclusions, have met with a wonderfully ready acceptance from a large section of the intelligent medical and lay public. One no longer hears the phrase "the new psychology." It has become the ordinary, and, indeed, the only, psychology.

What the modern young person does not know about complexes, projection, sublimation, and all the rest of it seems hardly worth knowing. And why not? It is always something to have the glad tidings accepted at all, and one cannot fairly complain if a convert's enthusiasm occasionally outruns his understanding. In any case it is rather beside the point, because if we are to come to any conclusions about the application of psychology to medicine we must consider the process as it is carried out by the acknowledged psychological experts. To do otherwise would be less than fair.

What scientific psychology has to offer to medicine is the psycho-analytic method of investigation and treatment. I say "investigation and treatment" because, as you all know, the two are inseparable. The investigation is the treatment and the treatment is the investigation. So inseparable are they that, as Dr. Ernest Jones and others have pointed out with proper pride, diagnosis very often comes after treatment and not before it. Though there are those who would object to this state of affairs, I for one have no complaint to make of it. I view it simply as one of those "necessities of the case" which William James, in his innocence, regarded as calling for the services of a metaphysicist. Psycho-analysis must make her contribution to medicine in her own way. She has also the undoubted right to say who shall or shall not preach her gospel, or, at least, to decide what qualifications her missionaries require. She seems to me to be disappointingly reserved in her account of what manner of man her champion must be, but that is her own affair. I suppose that one should not even criticise her requirements, but I have ventured to make a few comments on her list. It is a short list, but after a reasonably careful search I can find nothing to add to it.

THE EQUIPMENT OF THE ANALYST.

Firstly, then, the medical psychologist must undergo "a laborious special training, demanding at least three years incessant practice." I presume that he obtains the special training from books. As regards the three years incessant practice, it is not quite clear where he obtains his material—perhaps from among the deserving poor. In any case the rule seems an admirable one, and I should be glad to see it come into force.

Secondly, he must possess, before beginning this training and practice, "a good knowledge of neurology." The precise reason for this particular stipulation eludes me at the moment, but one can commend it heartily on general principles. At the least it is a graceful courtesy towards the art of medicine. It is indeed the one and only concession which the psychologist is specifically asked to make to the vast subject which he is approaching, and as such it has every claim to honourable mention.

Thirdly, the medical psychologist must himself have been analysed. This, although it is by no means universally observed, seems an eminently reasonable condition to make. It is one more of those "necessities of the case" which keep cropping up. Not being a metaphysicist, I must refrain from dealing with the delightfully interesting questions which it raises. I shall not even propound them. Personally I am entirely in agreement with the poet who says, referring to psycho-analysis, "Only those who brave its dangers comprehend its mystery." It is true that the poet is ostensibly referring to the sea, but, as we all know, the sea is a universal symbol of the unconscious, and his real meaning is thus quite clear.

Finally, the psychologist must have certain personal qualities of which patience, unimpeachable integrity, tact, and sympathetic understanding are those officially recommended. Such qualities are obviously ornaments to any man, though I confess that I had never regarded the two latter ones as being essential

to, or characteristic of, a devotee of pure science. I learn from Dr. Ernest Jones that without these qualifications the psychologist may fail to "gain the patient's confidence to the requisite degree." But this will never do. If there is one thing with which a scientific method has no concern it is surely the gaining of people's confidence by one's personal qualities. That is work for an unscientific and inferior order of beings.

In the very paper from which I have just quoted, and almost on the same page, we read: "In *suggestion* treatment the physician adds something to the patient's mind—confidence, belief, &c. The psycho-analytic method does not add. It is in almost every respect the reverse of treatment by suggestion." I cannot reconcile these two quotations. It looks very much like more work for our metaphysicist. Perhaps I should say, in parenthesis, that if anyone cares to object that I am quoting from a very old paper, I reply that I freely admit it, and that I hope to tell you why before I have finished.

However, if the psychologist really desires the graces of tact and sympathetic understanding it is not for others to suggest that he may put them to such base uses as that of gaining a patient's confidence. Let us rather rejoice that he adds these virtues to his unimpeachable integrity and his good knowledge of neurology, and let us consider how this "verray parfit gentil knight" will fare in his great adventure of applying psychology to medicine. Our knight-errant's venture, I am sorry to say, is a failure. It is rather a splendid failure, because he kills any number of dragons, he does little or nothing that is actively harmful, and he does a great deal that is helpful and wise and good. But he fails for all that.

PSYCHOLOGY AND "OBJECTIVITY."

There are various points of view from which the comparative failure of analytical psychotherapy can be discussed. The first one, which is staring us in the face, is the question of the attitude of the psycho-therapist to the patient he is about to treat. Scientific psychology has not the slightest hesitation in defining that attitude. The goal to aim at, we learn, is complete objectivity on both sides. This is admittedly difficult for weaker brethren, and it did not greatly surprise me to learn from Dr. Glover that "every psycho-therapist at one time or another is aware of a tendency to backsliding." The two commonest wanderings from the straight and narrow path of objectivity are, apparently, "flirtation with endocrinology," and "an impulse to give the benefit of the doubt to organic factors in illness." These are indeed regrettable lapses. I can only say of the first that boys will be boys, and of the second that it looks as if the good knowledge of neurology were already proving a double-edged weapon. What happens, by the way, to the tact and sympathetic understanding I cannot tell you. I presume that they fly out of the window as objectivity enters the door.

The purely objective attitude is, of course, the only right and proper one for a scientific inquiry. It is the ideal way to approach, say, a fossil, or—to be strictly accurate—for two fossils to approach each other. As between two human beings, ill or well, I should have thought that its utter impossibility would have been obvious to anyone with the very slightest experience either of medicine or of real life. But the psychologist cannot alter his attitude when he comes up against real life. To do so would be to destroy an admirably sound scientific edifice. If the facts of life will not fit in, so much the worse for them. And so it happens that his position sometimes comes to resemble that of the research physiologist whose experiments so often work perfectly in a test-tube and fail completely in the human body.

But we are in a stronger position than the physiologist. He cannot say, with any hope of being generally believed, that the human body is the same thing as a test-tube, but we can, and do, talk about "the series of events in space-time that constitute the living self." Many people will accept this statement without pausing to inquire what, if anything, it means. A few will realise how it recalls the delicious and polysyllabic fragrance of Herbert Spencer, and hardly any will have the courage to tell us that as a way of looking at medicine or life it is an academic and old-fashioned absurdity. But it certainly helps to justify the attempt at objectivity, which is always something.

Now there is a certain proportion of medicine and of life which comes into the field of vision even of a man who thinks that to study life is to look with complete objectivity at "a series of events." With this amenable proportion the psychologist deals admirably well up to his limits. With the much greater proportion which he misses he deals in a way which is hardly so creditable. He ignores it, as far as he possibly can, and when to ignore it becomes impossible then he misinterprets it or explains it away. The attitude of objectivity thus seems to get us into difficulties from the outset, and I must refer to some that arise from it before proceeding to other aspects of our subject. They can be summarised easily enough. Psychology is a science, medicine is an art. It follows that when psychology has given all she has to give it is only the purely scientific aspect of medicine that can possibly benefit. And in every medical operation, down to the simplest piece of therapy, there is an inevitable mixture of science and art. There is a scientific basis, there is a scientific technique, and there is—or ought to be—an element which, because it is art, defies analysis, but without which results are apt to be commonplace and incomplete.

I need not tell you that psycho-analysis does not accept this view. It cannot see any necessary difference between the attitude of a physician to his patient and that of a psychologist to his problem. It will never admit that there can be any element in any human relationship which is incapable of being scientifically analysed and explained.

PSYCHOLOGY AND "SUGGESTION."

Well, of course, there is, as we all know—psychologists included—and it is here that trouble begins. The psychologist finds before he has really tackled half a dozen patients that by far the most vital and potent factor in his relation with them, and his treatment of them, is something about which his psychology is silent and with which even his good knowledge of neurology does not seem to help him. Let me digress here for one moment to beg you not to misunderstand me on the question of scientific medicine. For unscientific medicine I have a hearty contempt and I have an even greater one for the unholy brood of so-called "pseudo-sciences" which cluster round it. There is nothing worthy in medicine which is unscientific, but there is a very great deal in medicine which transcends science, and which science cannot as yet explain or apprehend. Particularly is this true in psychological medicine, and, as we were saying, this is a fact which modern psychology cannot and will not grasp.

When I said a moment ago that she was silent on the subject, I was speaking something less than the truth. She is, of course, very far from silent. She forgets that there is nothing unscientific in being unable to explain a fact, and that indeed, the primary business of science is not to explain facts, but to admit and observe them. She puts every single fact in this connexion that she cannot fully explain into one enormous heap—a rubbish heap—and on the top of the heap she plants a banner with the strange device "suggestion."

The thing now proceeds on lines which psycho-analysis has itself made only too familiar to us all. The fact that something exists which we don't understand is, of course, intolerable, and the usual mechanisms come into play. A comprehensive explanation of "suggestion" is evolved, which gives the psychologist the most ample grounds for erecting beside his banner the red flag of "danger." Concerning this explanation—do you mind if I call it by its

technical name and say "this rationalisation?"—I have only to say without hesitation and with every hope of violent contradiction that it is probably the most sadly inadequate performance of which any science has ever been guilty.

But the matter does not end here. Though the psychologist has now a respectable "reason" for disliking "suggestion," yet he goes erring after it time and again, partly because he wants to, and partly because he cannot help it: it is a necessity of the case—of every case. This sad but familiar state of affairs may, I think, legitimately be termed a conflict. Officially—or consciously—the psychologist shuns "suggestion" like the plague. Unofficially—or unconsciously—he coquettes with it daily. Need I tell you the inevitable result? I don't mean minor results such as the lapsus calami which I quoted to you, but the main psychological result. It is simply the mechanism of an obsessive fear writ large. Psycho-analysis and its disciples are suffering from a psychoneurosis—a compulsion neurosis. The word "suggestion" is to them precisely what a red rag is to a bull—and for many parallel reasons.

Although I have dealt with this at some little length—the treating of people, however inadequately, with their own medicine being always attractive—it is really only the approach to a number of more important and practical questions which arise when we come to consider the actual treatment of patients by the psycho-analytic method. We have to deal with people who are sick in a particular way: people who may be described generally as suffering from mental disharmony of some kind or other. Our problem is a thoroughly practical and clinical one—what has scientific psychology to say to the victim of mental disharmony?

The Aims of Analytical Therapy.

It tells him first of all that with his coöperation it can disentangle and lay bare the very roots of conduct, that it can make him realise the sources from which his thoughts arise and the machinery by which he thinks. Such a realisation, it continues, will dissolve away the inhibitions, the make-believes, and the insincerities which cloud thought and hamper conduct, and he will become a man who sees himself as others see him, or even more clearly, and who sees life steadily and whole. Finally, and best of all, the psycho-neurotic symptoms which were the result and the proof of mental disharmony will disappear as mental harmony is restored. That is the essence of psychology's contribution to medicine; that is its message to the sick man. The message is, in the main, perfectly true, and yet, as I have said, it is a failure, regarded as a contribution to medicine. It is a failure, not because it is inaccurate, but because it is inadequate.

Let me remind you that for the purposes of this discussion I am freely granting the general soundness of the main body of psycho-analytical therapy, as well as its efficacy within its own limits and its freedom from harmful effect upon patients. You are aware that on all three grounds it has been fiercely attacked, and many of you would agree that some shrewd blows have been dealt it along these lines. But my quarrel with it is of a different nature, and as far as the above points are concerned I am quite prepared—without prejudice—to take it at its own valuation for the present. Besides, I very largely agree with that valuation. I believe that in a majority of cases psycho-analysis is more likely than any other method permanently to remove a given psychoneurotic symptom.

But we shall all be agreed that that is but a poor compliment. The mere removal of symptoms is a small matter—do not even the suggestionists the same? Analytical therapy's self-imposed task and method is the disentangling and rearranging of the whole mental life of the patient, so that psycho-neurotic symptoms become an impossibility. Neither is there salvation from neurosis in any other method. The whole thing is admirably logical and scientific. It is like an infinitely skilled workman dealing with some intricate and delicate machinery which has gone wrong.

There is bound to be an ascertainable and remediable cause for the irregular functioning so long as the laws of matter and motion remain. Yes, here it is; the friction is eased, or the foreign body removed, the parts are reassembled, and off we go again. Unfortunately, human beings are not constructed on the lines of a motor-car, or an eight-day clock, and they are just as incapable of completely scientific psychological analysis as they are of purely objective psychological approach.

Theory and Practice.

What exactly do we find when we begin to dissect the mind of John Smith? We find, for one thing, that he is a mass of ideas, prejudices, reactions, and beliefs, many of which are utterly irrational and are constructed on similar lines to psychoneurotic symptoms, differing from them, I suppose, only in degree, if at all. In any case, he certainly cannot be analysed and save these things intact. Down must come the entire structure. It was a queer shape, anyhow. True, it made up what he called his personality, but we can't help that. One must break eggs to have an omelette. And then—though we are debarred from giving him advice or assistance in the task—he can always re-educate himself to a more practical sort of personality, just as the omelette re-educates itself into a square egg. I know of but one recorded instance of this double metamorphosis being attempted with an egg—namely, the classical case of Humpty Dumpty. In that case the re-education was a failure, even with military help, but possibly John Smith may be more fortunate.

Let us take down this absurd looking old cabinet. I have borrowed it from another writer for the purpose. It is composed of hundreds of pieces of various woods, many of them very valuable, but its shape is wrong, the drawers work badly, and the mosaic pattern of the inlay has not been symmetrically arranged. As we proceed even graver faults in construction become apparent. The stresses and strains are all improperly distributed. Here is a stout cross-piece bearing nothing, and there is a lid which is only supported at all because two uprights have fallen out of place and are holding a weight for which they were never intended. However, we shall soon ease that. There is the whole thing on the floor at last. *Requiescat in pace*—or to be literally accurate—*in pacibus*.

Now for the reassembling. Strictly speaking, the new design ought to be specified by the cabinet itself and not by us—it should be a self-governing cabinet—but I waive that point. In a very short time we shall be only too thankful to put the thing together to any design at all. And at the end we shall be left, like the boy who analysed his watch, with half a dozen pieces that don't seem to fit in anywhere, but the cabinet somehow is not the same without them.

Is everything a neurotic symptom which is constructed as such symptoms are? Is everything which crumbles during an analysis a neurotic symptom? Is every irrational reaction or idea or belief a neurotic symptom? If so, what exactly *is* a neurotic symptom? If not, is it good that these things should be dissolved away, and is the analysed or unanalysed state the more healthy?

Be these things as they may, it is very certain that, apart from any "symptoms" he may show, John Smith's life is largely composed of irrationalities, which to him and for him are real and practical truth, and upon which his efficiency and health depend. All the logic is on our side, but the man is incorrigible. We put him right on the facts of life before birth in which he ought to believe but does not; we put him right on the legend of life after death, in which he ought not to believe, but does, and he might at least, one would imagine, live and think according to our logic between the cradle and the grave. But will he? By no means. We tell him,

for instance, all about the dangers and terrors of authority, we instruct him regarding infantile attitudes and reactions, and we preach the gospel of psychological independence. And all of it is true enough in its way. But John Smith is horribly practical. He knows all about authority—he was once an office-boy. He believes, with Johnson, that "no two people can be half an hour together, but one shall acquire an evident superiority over the other." His common sense tells him that personality needs a soil in which to flourish and a background against which to be displayed, and that unless the world is to be peopled exclusively by Mussolinis authority will be a reality in every department of human life till the end of the chapter. At least it is a reality, and a gladly accepted one, to him. The same is true of many more of his irrational components. They are the left-over pieces. We have proved that he can be reconstructed—after a fashion—without them, but they were real and essential to him, and he knows how to make use of them. They were his—and will we please give them back.

Psychology and Belief.

I want to go just a step further in this connexion before passing on, and to look for a moment at the objects, rather than the mechanisms, of irrational belief. To begin with, we all know that facts are of different orders and natures, and that in any study of facts by scientific method the scientist must begin by defining the nature of the phenomena with which he is going to deal. The phenomena with which the psychologist deals are conveniently grouped as mental. All the activities of mind and their outcome in behaviour are his province, and it is in connexion with those phenomena, and those only, that he should observe his facts, collect his data, and formulate and test his hypotheses. A patient has, let us say, various convictions and beliefs. These beliefs are psychological phenomena which should be carefully studied as such. That is to say, we can show the patient how his belief arose, whether his mental processes were as logical as he perhaps imagines, how he has rationalised, where he has been swayed by emotion, and so forth. We can, in short, expose and explain the entire machinery by which the belief has been produced, and the mental bases on which that machinery rests. What we cannot do, or rather, what we should not do, is to offer any opinion as to the truth or falsity of the thing believed.

When you have said all you have to say about my conviction that nine sevens are 63, and I then say: "Thank you, but as a matter of fact *are* nine sevens 63?" you have only one proper course—namely, to direct me to the nearest mathematician. The debate is now upon a mathematical question, not a psychological one, and has passed out of your domain into his. To that illustration, which, by the way, is borrowed, there is the reply that in it the mental processes are logical and the conclusion demonstrably sound. But neither fact makes the slightest difference to the principle. The principle still holds if I say, for instance, that my school was the best one, or that my university was the most modern one, or that my system of psychology is the only scientific one. If I tell you these things you may very properly draw certain inferences about me and my mental processes, but you have no business, as psychologists, to deny or dispute my conclusions. I may conceivably be right.

It is surely obvious that our concern should be only with the means by which a belief or opinion was reached. However faulty, insufficient, or absurd these means may have been has no bearing whatever upon the objective reality of the thing believed. That is a question for the appropriate department of knowledge: history, or mathematics, or astronomy, or perhaps the universal testimony of human experience. To all this you may reply that I am needlessly elaborating an elementary point, and discussing an error into which no good psychologist would fall. But failure to look carefully at the elementary points and to discuss them fully has been responsible for more misunderstanding than anything else in psychology. That, by the way, is my justification for lecturing on first principles to an audience of experts. The besetting sin of every medical psychologist is that he insists on running before he has learned to walk. He does more than run, he skates, and it is sometimes over very thin ice. As regards the frequency of this particular error I will only say that when we find, as we so often do, that something in which a patient believes is an externalisation of what he wants to believe, and that his conviction of it is produced by the familiar irrational mechanisms, then we are almost irresistibly tempted to deny to the thing believed the possibility of an independent objective existence.

We yield every day to the temptation to pass judgment on matters with which our psychology has nothing to do, and to confuse the mechanism of belief with the object of belief. A mental conception—a phantasy, if you like—can perfectly well have an independent objective counterpart as well. After all, many objective realities began as psychological ones, if you come to think of it. Although I may apprehend a reality in a round-about and fallacious way, it may exist none the less. It is very possible that in the first instance I believe something to be true because I ardently desire it to be true, and because it would meet my psychological needs if it were true. But does that necessarily make it false or non-existent? It is possible, you know, that realities exist which are suited to our psychological needs, and if it is a question of the fundamental psychological needs of every man and every age, then I think the possibility becomes a probability.

Phantasy and Reality.

Things may exist even though we hope for them. Occasionally, even in real life, a story may have a happy ending. There was once, for example, a small barefoot boy who, stimulated by the effects of stones, nettles, and broken glass, told his companions a silly little childish phantasy of some wondrous place where the floors were of smooth rubber, where neither nettle nor glass might enter, and where there should be no more gravel. And in this strange heaven, said he, there lived one who knew about feet and who cared for them, and who would give to his feet and to those of all who came there a wonderful covering, a protection from pain and cold and wet, a foot-joy such as it had not entered into the sole to conceive. And his companions who were psychologists in the making but were not yet perfected in the tact and sympathetic understanding so necessary to their profession, laughed at him. And the boy cried himself to sleep. And in the morning his father took him to a bootmaker's shop. And there he found not only boots beyond his imagining, but, strangely enough, a pair that fitted his feet and might have been made for them alone, as it were from the foundation of the world.

Nobody considers it impossible, or even remarkable, that things should exist which satisfy our bodily needs. Did you ever think of that marvellous and illogical character, the man who, craving for carbohydrates, found and ate the first potato? What a venture of faith! Almost anything might have happened. What did happen was that when he got home his wife, who was a psychologist but had only a fair knowledge of neurology and none of physiology, explained to him that the potato did not really exist, and that if it had existed it would probably have poisoned him. And the man said that he wished it had. The friends of Christopher Columbus told him that America was simply his phantasy, an externalisation of himself which had no objective existence outside his mind. When they found they were wrong they were much disappointed. Some people are a little disappointed still, but the fact remains that America was not an invention; it was a discovery.

We may note, by the way, that a similar kind of error tends to creep into our dealing with symbols.

This has often been pointed out before, and I do not propose to discuss it at length. All I have to say about it at the moment is conveyed by the story—which deserves to be better known—of the precocious little school-girl who laughed and giggled in the class when the teacher announced a lecture on wading birds, of which the first was the stork. When asked to explain her mirth, she replied with a knowing smile: "Oh, but teacher . . . the idea of there really being any storks!"

Father's mashie was several different things at the children's charades last night. It was an oar, and a putter, and a sceptre, and a fishing-rod. Nevertheless it retains an independent existence as a mashie in its own right, and is, in fact, the actual weapon with which father hacked his way to victory at the seventeenth hole on Sunday, though I admit you would never have thought so to look at the charade, or at the mashie, or, for that matter, at father. But this is rather a digression. If I am not becoming wearisome to you, I should like to consider one more aspect—perhaps the chief and central one—of the inadequacy of the psycho-analytic method of treatment.

The Inadequacy of Analysis.

Let us return for a moment to our rough analogy of the wooden mosaic cabinet. I do not wish to push it too far, but I may point out that something has eluded us in our analysis of it. The most important thing of all has eluded us—namely, the glue. We can testify to the strength with which it resisted our separation of the pieces, and to the fact that it looks as if it were all there still—but it will not stick the pieces together again. It has ceased to be adhesive. It will never be adhesive any more unless we add something to it, and, as we have learned, "the psycho-analytic method does not add"

Analytical psychotherapy shuts its eyes, of necessity, to many of the greatest and most powerful realities in human life. I say of necessity not only because it works, so to speak, on but one plane and by but one method, but also because it will not admit any realities in mental activity and experience unless they exist upon its plane, are amenable to its method, and can be expressed in its terms. Alone among the sciences it claims a universal applicability, and alone among the sciences it is never at loss. Its discoveries and truths are wonderful and helpful and fascinating, but when seen against the background of its own demanding—namely, the everyday life and health of men and women—they cannot help appearing what Mr. Alfred Noyes in some very striking verses calls "little truths." In a certain immortal allegory we read of a man who could look no way but downward, with a muckrake in his hand; a man who would neither look up nor regard, but raked to himself the straws, the small sticks, and the dust of the floor.

Now the usual uninformed and foolish criticisms of psycho-analysis are directed against the muckrake and the sweepings, with which I, personally, can see nothing amiss. The man seems to me to have done the most that could be demanded from anyone in his position. He used suitable apparatus, collected just what one would expect with it, and I have no doubt he left the floor a better place than he found it. Both his position and his implement made window-cleaning impossible. The limited nature of his activities was the direct consequence of his attitude, and it is his attitude to which I object. Such an attitude is bound, as I have been trying to show, to lead to misapprehensions, unwarranted assumptions, and incomplete results. But the greatest tragedy of it is the amount that eludes it altogether. The man does not realise the tragedy, because it never occurs to him to question his attitude, to expand his methods, or to admit his limitations. "I cannot see a sky," he says, "and my rake has never brought it along the floor to me. Therefore there is no sky, and that is the end of it." I fear that this attitude is a necessity of the case, both in the analyst and the analysed.

If, as I imagine, nobody has yet made a post-mortem psycho-analysis of Swinburne, in the approved manner, I beg to propose him as the next victim. Alternatively, if sciences have patron saints, I should put him forward for that office. I know of no one whose outlook shows so clearly both the strength and the weakness of the psycho-analytic position. In particular he possesses in almost unique degree the ability to make a desert and call it peace.

> "Though one were strong as seven
> Yet he with death shall dwell
> Nor wake with wings in heaven
> Nor weep with pains in hell."

The good cheer with which he enunciates this demonstrable truth is in quite the best tradition. And then, of course, we have the well-known lines:—

> "From too much love of living,
> From hope and fear set free
> We thank, with brief thanksgiving,
> Whatever gods may be,
> That no life lives for ever,
> That dead men rise up never,"

and so forth. Could the position possibly be better expressed? Note in particular the psychological independence achieved in the first two lines, the brevity of the transference phenomena, and the scientific caution of line four, merging into well-warranted confidence in the simple dogma which follows. Surely this is the sincere milk of the psycho-analytic word.

By way of contrast I should like to introduce to you the outlook of a very different, and, as I think, a more all-round character, whose creator, appropriately enough, is Mr. G. K. Chesterton. He is a knight, who rides "forever seeking after God," or, as we should put it, he is more interested in looking through the window than in cleaning up the floor. The fact that he may not be able fully to analyse or explain what he may see does not trouble him. He will experience it, and the experience will be none the less valid and real. But will he ever see anything? That I cannot tell you—not at present, anyhow. Shakespeare—or Hamlet—thought so, and the possibility is hinted at in an old-fashioned psychological handbook. And I think we must leave it at that. Besides, it is not the important point. We are not concerned with what he may or may not see. What really matters is that he has adopted an attitude and outlook from which vision is at least possible, and that the attitude makes for completeness and sanity and health, and is indeed essential for them. He is rather a fine fellow, this knight, though I fear that his sublimations and transferences need some attention, because there is in his eyes, he says . . .

> . . . . "the star of an unconquerable praise,
> For in my soul one hope for ever sings
> That at the next white corner of a road
> My eyes may look on Him."

Well, of course, if the man is going to talk that way we can't compete. It would be like inquiring the distance from roast beef to the square root of minus two. Our own familiar jargon, lying on the floor beside that rake, at least sounds as if it meant something, but when it comes to souls, and hope singing, then we give in. Unfortunately, we don't give in, as I have just pointed out, but let that pass. This knight of Chesterton's is at least a man, to whom life is a great adventure, surrounded with wondrous and mysterious possibilities, and is not a disgruntled machine to which life is a matter of complete indifference. Breathes there the man with—mind so analysed, that he doubts which is the happier and healthier and saner outlook?

Symbolic and Intimate Knowledge.

If psycho-analysis recognised any psychology but its own, I do not think it would be really difficult to clear up this matter of the truths which elude the analytic method. Is it not, in essence, a question of the two varieties of truths, about which William

James has so much to say: the "innate" or "a priori" truths, as he calls them, of the sciences, and the utterly different "truths of experience" or, if you prefer to go back to Locke, "mental" truth and "real" truth?

In Dr. Eddington's wonderful book "The Nature of the Physical World" there is a chapter on Science and Mysticism in which he discusses the same question, using the terms Symbolic knowledge and Intimate knowledge. "Intimate knowledge," he points out, "will not submit to analysis; or, rather, when we attempt to analyse it the intimacy is lost and it is replaced by symbolism." In that one sentence the necessary inadequacy of psycho-analysis is unanswerably set forth. If only this were admitted, how the value of its great work would be enhanced. Dr. Eddington gives a wonderfully happy illustration. He supposes, he says, that humour and wit can be analysed. Well, we can all assure him that he is quite right there. He then points out that after a sample of humour has been duly analysed and passed as a joke, the next thing to do is to laugh. "But it may certainly be predicted," he says, "that as the result of this scrutiny we shall have lost all inclination we may ever have had to laugh at it. It simply does not do to expose the inner workings of a joke. The classification concerns a symbolic knowledge of humour which preserves all the characteristics of a joke except its laughableness." And that is why psycho-analysis, though not of Scottish ancestry, misses the point of every joke it touches.

Now there are very large departments of life where intimate knowledge flourishes and symbolic knowledge is at a discount. It is when it insists on tackling these that the psycho-analytic method is specially apt to make itself look ridiculous. It becomes hopelessly confused, for example, between the symbolic knowledge which is theology, and the intimate knowledge which is religious experience. We cannot now discuss this great subject, but I may take a final illustration from it.

A great many years ago a company of working scientists made a singularly complete reductive analysis of Jesus of Nazareth. I do not suppose that as they carefully divided his clothing they imagined it possible that anything had eluded or escaped them. But something did escape them; something which for 2000 years has done more than any other single factor to influence individual characters and national destinies. I am not now concerned with the nature or the value of this something, but with its reality and potency. I merely state a fact which, if any sane person doubts, he can confirm by reading half a dozen biographies or a history book. Modern psychology, however, has but one method to apply to this unique phenomenon. Armed with our sword of science, and strong in our unimpeachable integrity and, of course, our good knowledge of neurology, we march forth to apply our instruments of precision to what is probably the greatest truth of experience. We go one better than our Roman predecessors, for we tear into futile strips not the garments nor the body, but the character and mind of that supreme personality, and we say "behold the man." We, too, are certain that nothing has eluded us, because—nouveaux riches that we are—we have not learned and will not learn that there are aspects and regions of reality which scientific method can never apprehend.

Psychology and Real Life.

And now what does it all amount to from the point of view of medicine? Simply this, that apart from any other considerations a method which is not in contact with the vital realities of which life is so largely composed and upon which health of mind so greatly depends, is bound to be inadequate as a means of treatment. The hardest and the truest thing one can say about psycho-analysis is that it is divorced from the everyday life of ordinary men. The very system that talks so much about individual psychology is, by a strange paradox, the very system that manufactures endless psychological generalities and turns them out with machine-made uniformity and mathematical precision. Even its deepest researches and truest discoveries have little practical and helpful relation to the life of experience. As far as John Smith is concerned, the Ego, the Super-ego, and the Id have just about as much to do with his life as the three-card trick has to do with the Derby.

John Smith does not want a system that explains everything; he feels that it would cramp his cosmos and make him think that there was nothing worth explaining. He is not thrilled by the prospect of saying "I understand and I am not afraid." He thinks that it is equally fine, and much more likely to be true, to say "I do not understand and I am not afraid." He has no objection to a poet telling him that hope is singing in his soul, though he wouldn't have put it that way himself, and he is quite prepared to add faith and charity to the orchestra. Another poet has referred to this irrational trio as "the music of the dream that never dies," but those to whom the journey from floor to window presents insuperable difficulties find it simpler to call them "transference phenomena."

I would point out, in conclusion, that in the present trend of psycho-analytical writings we find very striking examples and results of its detachment from practical life, and therefore from practical medicine. The writers seem to turn away from the clinical side of the subject as if aware of its incompleteness and sensing its pitfalls, to wander in the happy hunting-grounds of scientific speculation and research. The actual illness of the patient is sometimes referred to in a way which leaves the impression that the writer's main concern is to get busy with a description of what he has learned from the case, or an account of the principles which it illustrates. These are perfectly legitimate topics, and I quite agree that if a writer's medical equipment happens to consist solely of a good knowledge of neurology, one must be prepared to make allowances, but the high proportion of this kind of work is an interesting and significant fact nevertheless.

I said I would tell you why I quoted from an old paper. It was for the good reason that nowadays papers on practical medical psycho-analysis are almost impossible to find. I thought I had found one a few weeks ago, but as I read on it became clear that the author had not so much as seen the patients whose reactions he was describing.

Not long ago I heard two brilliant papers read during a discussion on a strictly clinical subject, but so far removed were they from the matter under consideration that when they came to be published their very titles had to be changed. While I would not go so far as to compare our psychological knight-errant with Sir Andrew Aguecheek who was dubbed, if you remember, with unhatched rapier and on carpet consideration, although a devil in private brawl, yet I do suspect him of spending more of his time over his well-known text-book on "The Principles of Dragon Hunting" than in single combat with individual dragons. This is by no means to his discredit. It is the last and final necessity of the case. He has been more than useful as it is; he has been essential. His fault is simply that he cannot realise his incompleteness, or admit so much as the possibility of coöperation with some one, let us say, like St. George, who, with all his faults, has been trying to slay dragons in a practical if empirical way for quite a long time.

You will please remember very specially that in what I have just been saying, and in the little I have yet to say, I am particularly referring to Freudian psycho-analysis—the true, original, and—as I think—self-limited method. Otherwise, it would, of course, be an overstatement to say that psychology, even in its present state, had but little practical and helpful relation to everyday life and experience. But those who do most to increase the intimacy of that relation are those whom Freudians disown.

It is as satisfactory as it is inevitable that psycho-analysis is becoming ever less prominent as a means

of therapy, and ever more effective and far-reaching and profound as a system of psychology. But if it were never applied to another patient clinical medicine still owes it a debt which it would be hard to overestimate. We need not discuss the reasons why the acknowledgment of that debt has been perhaps somewhat lacking in readiness and cordiality. It is possible that there may be faults on both sides. I should be sorry to leave the impression that I, for one, did not feel the debt keenly and acknowledge it frankly, and I trust that any apparent flippancies in my remarks have not exceeded the amount which is not merely allowable, but needful, if an address of this unconscionable length is to be tolerable at all. As for my more serious criticisms, psycho-analysis is only too well able to look after itself, and, in any case, I respect it too much to be insincere.

Psychology and Mysticism.

Until psycho-analysis can acknowledge and overcome its limitations, it cannot be what it claims to be: a complete, self-contained, effective, independent contribution to—indeed, a synonym and substitute for—the great art of psychological medicine.

Psychology is not an art; it is only the hope of an art. It is waiting for a greater than Freud—not necessarily a greater genius, but certainly a greater—because a more complete—man. When he arises, the necessities of the case will make him what we should now call something of a mystic, because his great work will be to connect scientific truth in some unimagined way with those great realities of experience apart from which mental life is a mechanical rattle, and mental health an impossibility. He will relate the machinery of mind, as never before, to every fact of life and of experience. It may seem a hard thing to say of him, but I expect he will believe in God. Otherwise I cannot conceive how he will succeed in reaching across the gulf between science and mysticism, between symbol and reality. One can hardly imagine that that gulf may ever be bridged and the road run clear from knowledge of mind to understanding of life and of the mysteries that lie in and around and beyond it. But should it conceivably happen, then science will have achieved her supreme triumph, and one need set no limits to its possible results.

One cannot readily picture the lines along which this great scientist will work nor the discoveries he will make. We can be sure, however, that he will not be false to science as we know it, though he will so enlarge its vision and scope that it will become a means of apprehending truths at which now we can only guess. When I think about this new and great scientist, I like to remember that new truths sometimes have a way of turning out to be simply old ones, expressed from a different viewpoint and in words more suited to the time. Remembering this, I sometimes wonder whether the wheel might conceivably come full circle after all, and whether science's last and greatest discovery might possibly—just possibly—prove to be a restatement, in much better words, of course, of something which was said by a great mystic long ago: that "God created man for immortality, and hath set eternity in his heart."

An Address

ON

PITFALLS IN UROLOGICAL DIAGNOSIS.

Delivered at St. Mary's Hospital Post-graduate Course on Oct. 6th, 1929,

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Acute Pyelitis.

Acute pyelitis is an infection of the mucous membrane of the pelvis and calyces of the kidney most frequently caused by the *Bacillus coli*. The severity of the condition varies considerably. An unrecognised acute pyelitis can lead to a chronic condition, which may prove to be most intractable. The great importance of early diagnosis is illustrated by the following case:—

A British officer, while serving in Mesopotamia, was suddenly taken ill with severe pain in his left side, a high temperature, and rigors. The diagnosis was sandfly fever, and the local symptoms were referred to an enlarged spleen, which was said to be present. He came to see me in 1924, when he had been overhauled and chronic pyelitis had been correctly diagnosed by many surgeons, but his symptoms had not been relieved. A routine urological examination revealed a left kidney infected with *B. coli*, a right kidney free, and the bladder unaffected. For one year he showed marked improvement and then suddenly relapsed. I asked Mr. Girling Ball to see him and he was advised to have a nephrectomy done as the only hope of clearing up his symptoms. Before this could be arranged he nearly died of hæmorrhage from an acute hæmorrhagic cystitis. Finally, in 1926, a left nephrectomy was performed and the patient is now alive and well. But his history shows what disaster can follow a missed pyelitis.

The symptoms of acute pyelitis are pain, vomiting, high fever, rigors, pyuria, and later frequent and painful micturition.

Pain.—This always starts in the side or lateral part of the abdomen, and is often described by patients as being situated in the iliac fossa. Never at any time is it referred to the central area of the abdomen. When the attack is established the pain is about the level of the umbilicus, extending from the outer edge of the rectus sheath round the loin to the margin of the erector spinæ. There may be typical referred pain in the groin, labium, scrotum, and down the thigh. It is continuous and not colicky. The severity of the condition varies considerably and cases are therefore classified as mild, severe, and fulminating.

Vomiting.—In most cases in the early hours of the attack there will be a single attack of vomiting, usually immediately after the onset of the pain.

Fever and Rigors.—The temperature is always high and may reach 105° F., and rigors are the most important diagnostic sign. I have never seen an acute pyelitis without a rigor.

Frequent and painful micturition are evidence of bladder irritation and are seen only after a few days, and then only in severe or unrecognised cases.

Pyuria.—In every case pus will be found in the urine, but at the beginning of the attack, when the diagnosis is in the balance, pus is in small amount only, and the more severe the case the less will there be at first.

Differential Diagnosis.

The diagnostic pitfalls are many. The right kidney is more frequently affected than the left in every unilateral renal lesion, and it is in the right-sided pyelitis that the difficulties are greatest. The appendix is at hand, the mimicry of its symptoms is not to be questioned, and acute appendicitis is a very common disease. Moreover, since the one condition demands immediate operation and the other is aggravated by unnecessary operation, the diagnosis is really important. We are here confronted with a clear-cut issue. It is not a question of there being something inside which demands exposure, but of the presence of a lesion which can be easily treated medicinally, and which can become a severe menace to health if unrecognised. I submit that if certain

principles are kept ever in sight the diagnosis need never be in doubt. The points to remember are:—

1. In acute appendicitis the pain always starts centrally in the abdomen around the umbilicus and spreads in time to exact localisation in the iliac fossa. In acute pyelitis the pain starts in the side.

2. In appendicitis a raised temperature is common, but not to the same height as that which characterises acute pyelitis.

3. No uncomplicated acute appendicitis ever has a rigor. No acute pyelitis is ever without one.

4. The urine should be examined. It may seem futile to discuss the pitfalls of diagnosis in acute pyelitis when an examination of the urine will settle the issue. But all of us can recall cases where the urine was forgotten. A quiet unoffending appendix may have been removed and days later, when frequent and painful micturition is noticed following appendicectomy, the pyelitis is regarded as a complication. But in truth the pyelitis is not a complication but the primary lesion. James Sherren once said that every bed should have a finger-stall suspended beside it; he might have added the suggestion that the abdomen of every patient should have emblazoned on it in the letters of imagination "Forget not the kidney." There are other conditions which may cause difficulties in diagnosis—e.g., gall-stones, cholecystitis, and other renal lesions. But the appendix is the chief villain of the piece.

The fulminating type of acute pyelitis is of so sudden, so dramatic an onset, and so disastrous a severity that it may be mistaken for a perforation of an ulcer, acute pancreatitis, and so on. The following case illustrates this:—

A young woman, who had been married about a year and lived abroad, was in London on a visit and dining with a large party at a restaurant when she suddenly collapsed. She vomited and was removed to a nursing home, where she was found to have a temperature of over 105° F., intense pain, and rigidity on the right side. Several diagnoses were suggested, but the occurrence of rigors and the presence of pus in the urine clinched the matter and the patient's return to health was rapid.

Hydronephrosis.

The next pitfall in urological diagnosis is hydronephrosis. The well-established type with a large sac presents a classical picture. There are recurrent attacks of pain in the side, followed by a distinct diminution in quantity of urine passed and the gradual appearance of a tumour in the loin. Later, with the relief of the obstruction, comes the passage of great quantities of urine and the subsidence of the tumour. This definite clinical picture is the one described in text-books and manuals of urology whose authors tend to overlook the fact that every hydronephrosis must have a beginning in a normal kidney, and that there is a long way to go before a large sac is formed. The first change in a kidney in commencing hydronephrosis is the obliteration of the indentation of the pyramid into the calyx, which, therefore, becomes clubbed and not cupped. But this gives but little added capacity to the pelvis, and no general enlargement of the kidney occurs. It is well worth diagnosing these cases early, because as the hydronephrosis enlarges, the kidney cortex atrophies and may finally become a mere shell; the earlier the diagnosis the less interference with renal function. In the early cases pain is the only symptom, and they fall into an acute and a chronic type. In the acute type there is a sudden onset of acute pain in the side, a single attack of vomiting, without fever, rigors, or any urinary changes. In the chronic type there are recurring attacks of pain, which is gradual in onset and less severe, and rather a dull aching pain in the loin, with a complete absence of any other symptoms.

The diagnostic pitfalls are numerous, but perhaps the most common is to mistake the chronic hydronephrosis for a chronic appendicitis. I myself am convinced that there is no such condition as chronic appendicitis in the absence of a previous acute attack, but I am aware that all surgeons would not go so far. In any event no case of chronic right-sided pain should be labelled chronic appendicitis until every other possible diagnosis has been adequately explored. If the possibility of a hydronephrosis is thought of, its presence can be proved or disproved by a pyelographic examination, a simple procedure for everyone concerned, including the patient.

Symptomless Hæmaturia.

Blood may be present in the urine in addition to other abnormal constituents, and with symptoms which make diagnosis easy. There is, however, one group of patients in whom hæmaturia is the only symptom. The blood comes either from the bladder, when a simple cystoscopic examination reveals the source and nature of the trouble, or from the kidney. For renal bleeding we are almost entirely dependent on the vision of blood coming from one ureteric orifice for localising the lesion to one side. It is true that X rays, with or without pyelographs, may reveal the cause, but in a large group of cases the blood must be seen by cystoscope, and the problem is to get the patient examined while he is still bleeding. Often he comes to see us bringing with him a specimen of urine full of blood, but a fresh specimen reveals none; in other cases cystoscopy is delayed so long that a negative examination results. Patients must be instructed to come for examination the moment they see their urine becoming red, even if it means leaving work; and when they present themselves a cystoscopy must be undertaken at once. The need for hurry is the fact that many of these patients are bleeding from a renal new growth.

The way in which blood is passed, whether before or after or during micturition, whether pure blood or mixed with urine, is of no diagnostic import. One point, however, should be noted. Occasionally a clot will be passed, long, cylindrical, and worm-like. This is a ureteric cast, and is pathognomonic of a renal neoplasm. The following case shows the difficulties in symptomless hæmaturia.

A man, aged 56, was seen after an attack of blood in the urine. A complete urological overhaul, including a double pyelography, revealed nothing. On four subsequent occasions he came one, two, or three days after bleeding, always with a negative result. At last I insisted upon his coming up the instant he noticed anything. This time he noticed blood in the urine before a luncheon interval at work. He left his office at 1.25 P.M. and was on the table being cystoscoped at 2.5 P.M. Blood was seen pouring from the right orifice, but it now no longer interested us because a nodular tumour of his right kidney could be felt. This proved inoperable, and although he came first at a period when the tumour must have been removable, nothing short of exposure of both kidneys could have given us the diagnosis.

This case shows the urgent necessity of investigating a hæmaturia at once, and not only within 24 or 36 hours.

Conclusion.

In conclusion, let me draw your attention to one method of investigation which is of particular interest in renal lesions—viz., the hyperæsthesia of the skin. Head's work mapped out brilliantly and accurately the skin areas corresponding to the different viscera. I must admit I have been singularly disappointed with the value of hyperæsthesia tests for any viscus save the kidneys. Renal lesions give a very high proportion of positive tests, and the areas should always be mapped out if present. No negative hyperæsthesia test is of any value, but a positive one may prove the conclusive piece of evidence needed. I hope I have succeeded in bringing before you a picture of some of our difficulties in urological diagnoses, and I shall be happy if I have succeeded in refreshing in your minds the teaching of your old teachers, that in every case of abdominal pain the urine should be examined, and the kidneys remembered as the possible source of the trouble.

THROMBOSIS OF THE SUPERIOR CEREBELLAR ARTERY.

INCLUDING REPORT OF A CASE WITH UNUSUAL CEREBRO-SPINAL FLUID REACTIONS.

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THE case described illustrates certain interesting points in the clinical syndrome resulting from thrombosis of the superior cerebellar artery, and provides further material upon which the identification of that syndrome can be based. In addition, the changes in the cerebro-spinal fluid are sufficiently unusual to be worthy of attention.

The patient, a female aged 55 years, was admitted to hospital on Dec. 1st, 1928, complaining of loss of power in the left arm and leg, together with spontaneous movements of the left arm. These symptoms had been present for three weeks, but the total duration of the illness was five months. She had been in poor health for 12 months. For five months she had fidgeted with the left arm, had suffered from attacks of giddiness, and had vomited in the morning. During that time she had been very irritable and easily upset; and at times depressed and excited. Five weeks before admission she had complained of pain across the shoulders and in the left arm; then for two weeks she had suffered from "dermatitis" involving the body but not the face. For three weeks there had been gradually increasing loss of power in the left arm and leg, and the spontaneous movements of the left arm had become more severe. Speech had been a little thick during this time. Five years before she had had an attack of pleurisy and "congestion of the lungs." Shortly afterwards she had had an accident in which she cut the left eyebrow. She had been married 24 years. There had been no pregnancies. Of the previous marriage there were two children, one of whom had died of a spinal complaint.

Condition on Examination.

The pupils were small, the left larger than the right; both were irregular and reacted normally. Vision was good in the left eye and slightly deficient in the right eye. There was apparent narrowing of the visual fields on the temporal side, but a perimeter chart of the fields showed that there was moderate concentric contraction of both fields. The temporal halves of both optic discs were pale; the arteries were small and showed a white reflex; the veins were engorged and kinked where crossed by arteries. The ocular movements were normal and there was no nystagmus. In speaking some words were slurred but everything could be easily understood. Hearing was fairly good. Excepting for weakness of all the facial movements, the other cranial nerves were normal.

Cotton-wool, pain, and thermal sensibility were apparently less distinct in the left arm than in the right. The difference between the two sides was much more obvious in the arms than in the legs. Deep pressure was unaffected. In the left arm there was loss of the sense of position, vibration sense was absent, and localisation was defective. The recognition of size and shape was also defective in the left hand, but normal in the right hand. Because of the variability of attention finer changes could not be elicited. In the right arm motor power was fairly good, muscle tone was normal, and the deep reflexes were sluggish. In the left arm motor power was very poor, muscle tone was much diminished, and the deep reflexes were absent. In the right leg motor power was fairly good, muscle tone was normal, the knee- and ankle-jerks could not be elicited, and the plantar reflex was flexor. In the left leg motor power was much decreased, muscle tone was diminished, the knee- and ankle-jerks were absent, and the plantar reflex was flexor. The abdominal reflexes were all absent. The patient could neither stand nor walk.

Wavy, sinuous movements with a definite, slow pattern, but failing to reach an object if directed towards it, occurred in the left arm on attempts at effort or on emotion. There were slow serpentine movements of circumduction at the shoulder, pronation and supination of the forearm, flexion and extension of the elbows and wrists, flexion and extension of the interphalangeal joints with abduction and adduction of the fingers. With the finger-nose test, on the right there was a slight intention tremor with the eyes open, slightly increased with the eyes closed; on the left there was a pronounced intention tremor with exaggeration of the spontaneous movements, apparently resulting from them. It was impossible to test for Rombergism. Repeated alternating movements were performed clumsily in the right hand and arm and were impossible in the left arm. Rebound was fairly good in the right arm but exceedingly poor in the left. The initiation of the slightest voluntary movement in the left arm resulted in the whole range of the movement being carried out suddenly and the hand falling in a flail-like manner against the face, the body, or the side of the bed. There was definite decomposition of movements and dysmetria in the left arm. An attempt to hold the arms horizontally and parallel in front of the body with the eyes closed resulted in a very slight spontaneous deviation of the right hand to the right and the spontaneous movements of the left arm and hand.

The sphincters were normal. The abdomen was full and the anterior abdominal wall rather lax. The bowels were normal. The heart and peripheral vessels were normal but the retinal arteries were arterio-sclerotic. The pulse was regular; the blood pressure was 160 systolic and 115 diastolic. The patient had a frequent, loose cough; there were sonorous rhonchi over the right lower chest behind, and fine crepitations were audible at both bases. The skull and spine were normal.

The cerebro-spinal fluid obtained by lumbar puncture was clear and contained five "small lymphocytes" per c.mm. There was 0·24 per cent. of total protein. Globulin was present in very marked excess, mostly pseudo-globulin, with the faintest trace of fibrinogen and a trace of euglobulin. Free complement was present. The Wassermann reaction was completely negative with the heated fluid. The Lange test produced the curve: 2345444443. The Wassermann reaction in the blood was negative.

Attention could be gained but not maintained for any length of time; perception and orientation were normal; the memory was defective, and the reasoning power was apparently unaffected. On account of the difficulty in keeping the patient's attention, those parts of the clinical examination dependent upon her coöperation were difficult to carry out.

Subsequent Progress.

Dec. 14th, 1928.—All types of sensation were impaired in both the upper and lower limbs and the patient's coöperation and attention were not so good as they had been at the previous examination. The changes were more advanced in the left arm and had appeared in the right arm as well. In the left arm motive power was practically absent, the limb was flaccid and definite movement towards an object was impossible. An attempt to test the rebound of the limb resulted in its falling like a flail. In the right arm motor power was very poor, muscle tone was decreased, and there was definite intention tremor. Rebound was very poor, while dysmetria and decomposition of movements was quite evident. In the left leg motor power was very poor, the limb was flaccid, the knee-jerk was absent, and there was no response on stimulation of the sole of the foot. In the right leg the same changes were evident, except that the loss of tone was not so pronounced. The right pupil was larger than the left, and both reacted sluggishly to light.

Dec. 31st.—The patient had a respiratory infection with a febrile reaction and rhonchi over the whole of the chest. The heart sounds were strong. The condition of the left arm was unchanged, but the right arm had become almost as hypotonic as the left, with pronounced flaccidity, absence of deep reflexes, dysmetria, decomposition of movements, and absence of rebound. There was complete inability to retain either the right or the left arm in one position. The left leg was unchanged, but in the right leg hypotonia was more pronounced. On both sides an attempt to elicit the plantar reflex produced no response. Spontaneous movements were present in both the right and the left arm when movements of the limbs were commenced voluntarily. Local muscle "twitchings" were present in all four limbs. A chart of the visual fields showed moderate concentric contraction of both fields.

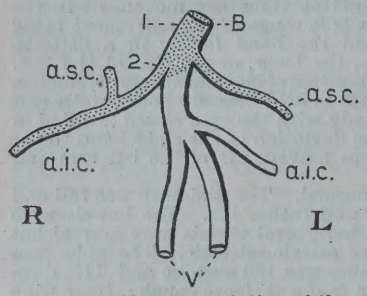
Jan. 1st, 1929.—There were numerous crepitations at both bases.

Jan. 2nd.—The right base was dull on percussion, there were numerous bubbling râles over the whole of the back of the chest, and the heart sounds were failing. Death occurred the following day.

The Pathological Findings.

The autopsy was confined to the brain. There was no evidence of any gross lesion on naked-eye examination. The arteries at the base was examined in detail and found to vary somewhat from the usual anatomical arrangement.

(See figure.) After giving off the posterior inferior cerebellar arteries, the two vertebral arteries united to form the basilar artery at the lower border of the pons. A little above this level a small branch, probably the anterior inferior cerebellar artery, was given off on the left side and distributed to the anterior portion of the inferior surface of the left lateral lobe of the cerebellum. Slightly below the middle of the pons there was a large branch on the right side which immediately divided into two branches, the lower representing the anterior inferior cerebellar artery and the upper the superior cerebellar artery. At the middle of the pons a large branch was given off on the left side—the left superior cerebellar artery. The lumen of the vertebral arteries, the posterior inferior cerebellar arteries, the left anterior inferior cerebellar artery, and the basilar artery as far as the large branch on the right side was quite patent. From the large branch on the right side up to the posterior communicating branches the basilar artery was definitely thrombosed. This thrombus extended into the common stem of the superior cerebellar and anterior inferior cerebellar arteries on the right side and into the superior cerebellar artery on the left. No naked-eye changes were visible in the area of distribution of these vessels.



Diagrammatic representation of the arteries at the base of the brain in the case described. The vertebral arteries (V) unite to form the basilar artery (B) and at once give off the anterior inferior cerebellar artery (A.I.C.) on the *left* side. Above this level and slightly below the middle of the pons, on the *right* side, there arises from the basilar artery a large branch which immediately divides into two branches—the lower (A.I.C.) representing the right anterior inferior cerebellar artery and the upper (A.S.C.) the right superior cerebellar artery. At the middle of the pons a further branch is given off on the left side—viz., the left superior cerebellar artery. The shaded area represents thrombosis. 1 = Recent red thrombus with (microscopically) great excess of leucocytes. 2 = Recent thrombus slightly adherent to vessel wall with more fibrin than 1, and some endarteritis proliferans of inner coat.

Sections of the basilar artery were made (1) midway between the left superior cerebellar artery and the posterior communicating branches; (2) at its junction with the left superior cerebellar artery; and (3) at its junction with the common stem of the right superior cerebellar and anterior inferior cerebellar arteries. Microscopical examination of the first section showed the presence of recent red thrombus with a great excess of leucocytes, both polymorphonuclear and mononuclear cells. The second section showed similar changes, but a little more fibrin was present; the clot was slightly adherent to the wall of the vessel and there was some endarteritis proliferans of the inner coat. The third section was similar to the second, the latter including the left superior cerebellar artery and the former the common stem of the right superior cerebellar artery and anterior inferior cerebellar artery.

Vertical antero-posterior sections were made through the lateral lobes of the cerebellum close to the pons. The sections were examined particularly for evidence of degenerative changes and of any obvious differences between the two sides. Nothing very striking could be made out either in the molecular or the granular layers, excepting perhaps some degenerative rarefaction at the junction of these parts where the Purkinje cells lie, though probably some of this appearance was merely an artefact. In the white matter of both sides of the upper half of the cerebellum there were, however, some small scattered areas of glial rarefaction—"froth-like areas"—probably around or in the neighbourhood of blocked or degenerated vessels, a few of them almost amounting to small degeneration pseudo-cysts. Occasional vessels showed some perivascular "small round-cell" collections, and many had dilated lymphoid spaces around them. Some thrombosis of small vessels was also present in the lower part of the superior cerebellar peduncles and in the lateral parts of the pons.

Commentary.

When the patient came under observation there was probably a number of small thromboses in different parts of the brain, as suggested by the decrease in the patient's mental acuity. The physical signs elicited at that stage would appear to have been due to two distinct groups of thromboses. The spontaneous movements, loss of muscle tone, and the associated changes in the left arm were probably the result of thrombosis of the left superior cerebellar artery, while the sensory changes on the same side were probably the result of thromboses already present in the small pontine branches of the basilar artery on the right side. It appears to be unnecessary to assume that the motor changes and the variations in sensation were the result of the thrombosis of a single artery in a patient in whom there was some evidence of multiple thromboses elsewhere. Such, however, would appear to be the assumption made by Guillain, Bertrand, and Peron in their description of a case of thrombosis of the superior cerebellar artery and identification of the syndrome of the superior cerebellar artery. In their case the three important groups of symptoms were: (1) involuntary movements of the right side and particularly of the arm; (2) a right-sided hemi-cerebellar complex; and (3) left-sided dissociated hemi-anæsthesia of the syringomyelic type. Associated with these symptoms was softening of the superior aspect of the right cerebellar hemisphere and of the lateral aspect of the right side of the pons; disintegration of the right superior cerebellar peduncle and lateral fillet, and no involvement of either the pyramidal system or any of the cranial nerves. It is difficult to see why the entire clinical and pathological picture in this case was included as the syndrome of thrombosis of the superior cerebellar artery. It is more probable that the symptoms and pathological changes referable to the lateral part of the pons were due to thrombosis of the small pontine branches of the basilar artery on that side, and that the symptoms and pathological changes referable to the cerebellum and superior cerebellar peduncle were the result of thrombosis of the superior cerebellar artery on that side. If that were so, the pontine symptoms would have been comparable to those which appear when the lateral arteries of the medulla become thrombosed. The clinical and pathological findings in our case support the view that the clinical picture in Guillain, Bertrand, and Peron's case [1] was the result of two distinct groups of thromboses, for in our case it is impossible to explain the occurrence of sensory changes and cerebellar signs on the same side by postulating that the superior cerebellar artery supplies the lateral aspect of the pons as well as the superior surface of the cerebellum and the superior cerebellar peduncles.

We suggest, therefore, that the syndrome of thrombosis of the superior cerebellar artery might more correctly be defined as: (1) involuntary movements, particularly of the arm on the side of the lesion, together with (2) symptoms of a unilateral cerebellar lesion on the same side. The movements are wavy and sinuous with a definite, slow pattern, failing to reach an object if directed towards it, absent at rest, but appearing and aggravated by attempts at movement or by emotion. The symptoms of a unilateral cerebellar lesion present are those usually associated with such a lesion, but the loss of muscle tone is the most prominent feature. The symptoms are also much more definite in the arm than in the leg.

The pathological changes underlying the subsequent clinical picture in our patient were probably thrombosis of the pontine branches of the basilar artery on the left side as well as on the right, thrombosis of the basilar artery itself and occlusion of the common stem of the superior cerebellar and anterior inferior cerebellar arteries on the right side. The constriction of the visual fields was probably due to interference with the blood-supply to the visual cortex by way of the posterior cerebral arteries; this interference was only partial, partly because of the incomplete occlusion of the vessel and partly because of the anastomotic supply to the visual cortex, particularly to the area for macular vision, through the middle cerebral artery.

It is interesting to note that the so-called syndrome of the superior cerebellar artery was much more extensive on the right side than on the left, in that the leg

[1] Guillain, G., Bertrand, I., and Peron, N.: Rev. Neurol., 1928, ii., 835.

was affected quite as seriously as the arm. This was due to the unusual anatomical arrangement on the right side—the superior cerebellar and the anterior inferior cerebellar arteries arising from the basilar artery by a common stem. Consequently thrombosis of the stem and of its two branches resulted in interference with the blood-supply of part of the inferior surface of the cerebellum as well as of the superior surface. The difference in the clinical pictures on the two sides strongly supports the localisation of the control of movements of the upper limbs in the upper part of the cerebellum, and of those of the lower limbs in the lower part of the cerebellum.

The changes in the cerebro-spinal fluid were unusual and resembled those seen in cases of spinal block. Free complement was present in the fluid, and in the Lange test there was maximum decolorisation of the gold solution in the middle of the series of dilutions. These changes, so common in cases of spinal block, appear to be equally characteristic of cases of cerebral thrombosis in which it is probable that there is some encroachment of the thrombotic areas on the cerebro-spinal fluid system.

We are greatly indebted to Dr. W. E. Carnegie Dickson for the pathological report.

Summary and Conclusions.

1. A detailed description is given of a case of cerebral thrombosis in which the prominent early lesion was thrombosis of the left superior cerebellar artery.

2. The syndrome of thrombosis of the superior cerebellar artery includes spontaneous movements on the side affected, together with the symptoms and signs of a unilateral lesion of the cerebellum on the same side.

3. There appears to be no justification for including the sensory changes frequently present as a part of the syndrome of occlusion of the superior cerebellar artery; they are much more satisfactorily explained as the result of other thromboses in the small pontine branches of the basilar artery.

4. When the superior cerebellar artery arises alone from the basilar artery the clinical picture of thrombosis of the vessel is that described above and involves chiefly the arm; when, however, this vessel arises by a stem common to it and to the anterior inferior cerebellar artery, occlusion of this stem produces changes in the affected leg almost as definite as those in the affected arm.

5. The changes in the cerebro-spinal fluid are similar to those occurring in cases of spinal block; they are probably the result of encroachment of thrombotic areas on the cerebro-spinal fluid system.

AURICULAR FIBRILLATION IN CHILDREN.

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It is well known that complete arrhythmia is uncommon in children. In the tables of the age-incidence of the disorder which have been published relatively few cases under 20 years occur. Levine found none under 17 out of 128; Brachmann found none under 16, and eight only between 16 and 20, out of 400; Willius had five cases between 11 and 20, out of 500; Mackenzie records five cases under 20, out of 500; Cowan and Ritchie had six between 10 and 19, out of 300; Coombs in 58 cases of rheumatic heart disease had two between 11 and 20; Hart found one under 10 in 300.

In the first decade auricular fibrillation has occurred so rarely that the published records nearly all deal with isolated examples. It has been recorded that fibrillation developed in a child of 3 (Samet and Tezner); digitalis was being given but the authors deny any connexion between the medication and the arrhythmia. No graphic record is published, however, in support of the claim, and as fibrillation is otherwise unknown at this age, the case cannot be accepted as authentic. Resnik and Scott publish the case of a boy of 4 with auricular fibrillation; the ætiology is uncertain, but is probably rheumatic. This is the youngest case in which graphic proof is supplied. Leys and Russell recorded the case of a boy of 6 who came under observation with a large heart. At first there were three distinct rhythms—probably auricular flutter, auricular fibrillation, and normal rhythm—but since then, a period of two years, fibrillation has been present, and the child has had to be kept in bed most of the time on account of cardiac and acute rheumatic symptoms (personal communication). Other solitary cases are reported by Ogden, Ehrenreich, Nobecourt and Pichon, and Sidel and Dorwart. A case recorded by Nadel is quoted by Schwartz and Weiss as an example of fibrillation in a child of 10 or under, but the description of the electrocardiogram, which is not itself published, suggests flutter. Moreover, the child was 11 when the abnormal rhythm was first observed. In the case described by Sutherland and Coombs, the polygram, as Schwartz and Weiss also note, is more suggestive of premature beats than fibrillation. Again, in that of Price and Ivy Mackenzie, said to show fibrillation and complete block, the tracing published leaves the diagnosis of fibrillation uncertain. Neuhof cites the case of a child of 8 whose electrocardiogram is said to show a short paroxysm of fibrillation lasting about three seconds; it is difficult, however, to exclude an instrumental cause for the oscillations which have been taken to indicate fibrillation in this record. In Coombs's series of rheumatic cases with fibrillation there are two under 10, but no details are given. In these 11 reported cases, aged 10 or less, rheumatic heart disease was certainly present in six and probably present in two others. In three of the cases in which the arrhythmia was permanent, death occurred on the average seven months after it was discovered. One patient is still alive two years after the inception of fibrillation, though confined to bed.

Recently Schwartz and Weiss have asserted that fibrillation in children is not nearly so rare as has been supposed. They recorded it with the electrocardiograph in 10 out of 60 patients admitted to hospital with rheumatic heart disease in a period of five and a half years. Six were aged 7½ to 10, and four 11 to 15. Four of their cases died within a week of the onset, and three more within a year. The authors believe that the unusually high incidence of auricular fibrillation in their cases was the result of more careful observation and, as evidence in support of this, they quote the incidence—a much lower one—for a previous period in their hospital. Another factor must be considered, however, and that is the quantity of digitalis which their patients received; in the instances in which the dose is stated, the amounts usually exceed those which in this country would be considered adequate for an adult. All were having digitalis at the time of onset of the arrhythmia. In discussing the causation of the arrhythmia in their cases Schwartz and Weiss consider digitalis as a factor, but only in one case do they regard it as being definitely related to the onset; in the others they regard the relationship as unproved. It remains quite likely, however, that digitalis is the explanation of the high incidence of fibrillation which they discover in children. There is no lack of evidence, both experimental and clinical, that digitalis is able to produce auricular fibrillation. (See Danielopolu, Mackenzie, Reid, and Resnik.)

Thirty-five Cases of Auricular Fibrillation in Children.

In 15 years (1913–28) auricular fibrillation was diagnosed in 1164 cases admitted to the London Hospital; females were twice as numerous as males.

* Working under the Paterson Bequest.

Those of 17 and under have for the purpose of this investigation been considered as "children." There were 30 "child" cases, or 2·5 per cent.; five have been added from other sources making 35 in all; the sex ratio was three girls to two boys—a smaller female predominance than in the adults. The youngest was aged 12. The diagnosis of fibrillation rests on graphic proof in only 10 cases—an unfortunate fact, due largely to the present reliability of clinical methods which are satisfactory for any but research purposes, and partly to the serious condition of some of the patients, which did not justify interference for non-essential examinations. Where graphic records are lacking the other findings are as conclusive as possible, and in all the following criteria are satisfied: rapid and very irregular heart, persistent irregularity, and response to digitalis by considerable slowing. Rheumatic heart disease was the basis of the arrhythmia in all cases, and a history of the acute illness was lacking in six only. The average age at which the first rheumatic symptom showed itself was not unusually early, though a majority of the cases had suffered from symptoms of heart disease for a considerable period before the onset of the irregular rhythm; in 19 cases this period averaged four and a half years; in four cardiac symptoms appeared for the first time with the onset of fibrillation. As is the rule in adults, failure was a familiar accompaniment of the inception of the new rhythm and occurred in 22 out of 30 in which satisfactory information on this point could be obtained. In five failure had made its appearance while normal rhythm was present, and in the remaining three no failure was observed immediately or shortly after the onset.

Clinically, mitral stenosis was diagnosed in 25 of the 35 cases, four of these having aortic incompetence in addition; in two the aortic valve alone was affected. The heart was enlarged to palpation in all, considerably so in 17 (48 per cent.). Thirty-one cases have now been traced, and of these 23 have died of heart disease after an average duration of ten months with auricular fibrillation, the maximum period being five years and the minimum three weeks. It is interesting to note the fate of three patients in whom reversion to normal rhythm took place after short periods of fibrillation. In one in whom the reversion was spontaneous death occurred five years afterwards from meningitis, normal rhythm persisting till the end. Another, a boy of 16 successfully treated with quinidine, is alive and has normal rhythm six and a half years later, and is able to do light work. The third case merits, perhaps, a description in more detail.

In 1913 a girl, aged 17, was admitted to hospital with mitral stenosis, auricular fibrillation, and failure, the onset of which coincided with that of the abnormal rhythm. Treatment with rest and digitalis gave some relief but she was still very ill at the time of her discharge and the parents were told that she would be unable to do any work. In 1929, 16 years later, she reported at the hospital with normal rhythm. The heart was considerably enlarged, and the signs of mitral stenosis and aortic incompetence were present. She was in fairly good health, and said that from a time six months after her discharge from hospital she had been doing office work, and her only enforced absence from this had been a period of two weeks with "influenza." Moreover, she was able to dance and to play tennis for an hour at a stretch. It is impossible to date the return to normal rhythm in this case, but it probably happened soon after she left hospital as she has never since felt the heart beating rapidly as it did then.

The subsequent duration of life in these three instances of return to normal rhythm forms a contrast with the expectation of life in those with persistent fibrillation, which may not be without significance.

Established fibrillation in young people of 17 and under must be regarded as a serious condition which is not long survived. In 23 cases the average duration of life after the onset of the abnormal rhythm was ten months. During those months the patients were confined to bed with congestive heart failure on which rest and digitalis had little effect. This is in contrast with the corresponding condition in adults, in whom the average duration of life is much longer (four and a quarter years in a group of 47 rheumatic cases followed up till death),† and appropriate treatment commonly gives rapid relief. No other cause than rheumatic heart disease was found to account for fibrillation in children. It was not found that rheumatic fever had affected the patients at an earlier age than usual, but a history of suffering from heart disease for several years before the onset of the arrhythmia was the rule, although severe symptoms and the signs of congestive failure only appear, in the majority, when the change in rhythm occurs.

I have to thank Dr. John Parkinson for his help and those physicians of the London Hospital who have permitted me to use their cases.

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GLUCOSE INTOLERANCE IN VARIOUS DERMATOSES.

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SINCE 1915, when Pels published his results of an investigation of the blood-sugar content of 50 cases of various dermatoses, several papers have been written on the subject, but, although all the investigators agree that a slight hyperglycæmia occurs, the type of lesion in which the rise is present varies in the different papers.

Pels [1] found the blood-sugar varied from 0·07 to 0·156 per cent., the average being 0·107. These readings showed hardly any increase above the normal, but were approaching the higher limit of normality. He suggested that further research would elucidate the types of lesion in which an alimentary hyperglycæmia could be inferred, and that the treatment of hyperglycæmia would be a useful aid in the treatment of skin diseases.

In 1916, Highman, Schwartz, and Mahnken [2] investigated 149 cases, 89 of which gave no increase, but a group of 60 cases of acne, seborrhœa, and sycosis gave a more or less constant hyperglycæmia. They considered that lesions of the pilosebaceous follicles were more liable to be associated with hyperglycæmia. In 1921, Pick [3] reported an almost constantly increased blood-sugar content in cases of psoriasis, a slight increase in the majority of seven cases of furunculosis, and a moderate hyperglycæmia in six

† Unpublished observations.

of 12 cases of secondary syphilis. McGlasson [4] investigated a large series of cases but only took one reading of each patient. He did not think that the hyperglycæmia was the only ætiological factor but noted a definite sensitiveness in some cases, and that the hyperglycæmia was higher at each recurrence of the disease. He found a marked improvement in the skin lesion when the patients were given a carbohydrate restricted diet.

In England Haldin-Davis, working with Willis,[5] found a definite abnormality in 13 out of 20 cases of eczema but was unable to correlate abnormalities in blood-sugar with any particular type of eczema. He found that diabetic treatment was unsatisfactory. Campbell and Burgess [6] divided skin lesions associated with hyperglycæmia into two groups—namely, those occurring during pregnancy and those developing in patients over 50 years of age. They reported good results following suitable dieting, and pointed out that there is nothing to suggest sugar intolerance in the appearance of a lesion, but that it should be suspected where an intractable dermatitis develops in a person of middle age who was previously quite free.

The Present Investigation.

This paper embodies the result of personal investigation of 120 cases at the Manchester and Salford Hospital for Skin Diseases.

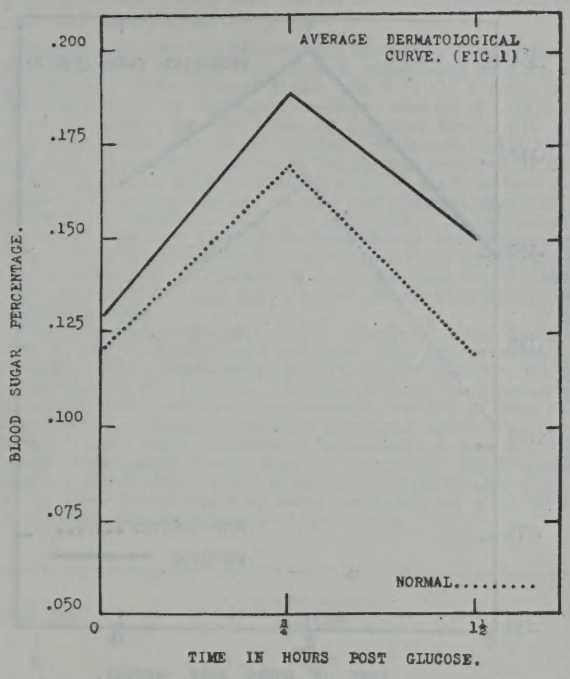
A fasting reading was taken in each case; 50 g. of glucose in 150 c.cm. of water were then given by the mouth and further readings taken three-quarters and one and a half hours later. The normal blood-sugar varies considerably in healthy subjects, so the average for a series rather than individual results have been taken wherever possible, and the highest limits of normality have been taken as 0·12 per cent. for the fasting level and 0·17 for the maximal reading.

Of 120 cases of all types of dermatoses only 28 (23·3 per cent.) gave normal sugar readings. The other 92 showed some deviation from the normal, though in many cases the abnormality was only slight. The average curve for the series was a fasting level of 0·13 rising to 0·188 three-quarters of an hour after the ingestion of glucose, and decreasing to 0·15 in another 45 minutes (Fig. 1). From these results it will be seen that a large percentage (76·7) of patients suffering from dermatological lesions show some abnormality in their blood-sugar content. Furthermore, the abnormality is in most cases of the "lag" type, an abnormality which points to some defect in the mechanism by which glucose is stored in the liver as glycogen.

The question next to be considered is the type of lesion in which a hyperglycæmia is liable to occur. To ascertain this a pathological classification was first adopted.

In psoriasis, of which 14 cases were examined, the average blood-sugar curve was raised throughout to a slight extent, rising from a fasting level of 0·13 to 0·19 per cent. in the second reading and falling to 0·16 in the last reading. In the lichen group—a group of diseases characterised by intense itching—the curve was higher throughout, rising from 0·151 to 0·207 and falling to 0·177. In nine cases of pruritus—localised and general—in which no cause for the pruritus could be discovered and which were, therefore, classified as pruritus simplex, the curve rose from 0·134 to 0·206, falling to 0·141 in an hour and a half. Forty cases of eczema showed on the average a very slight increase but some delayed lysis, the three estimations reading 0·131, 0·194, and 0·148. A group of 20 cases of disease of the pilosebaceous follicles, such as acne vulgaris and coccogenic sycosis, gave readings 0·121, 0·173, and 0·136, showing practically no increase at all.

From these figures it will be seen that a slight increase occurred in each group, but a much more marked increase was present in the lichen and pruritic groups. The statement of Highman, Schwartz, and Mahnken that diseases of the pilosebaceous follicles showed the most marked hyperglycæmia was not confirmed. In fact this group of cases showed the least deviation from normal of the whole series. Pathological classification did not point to any one lesion being associated with glucose intolerance. The lesions showing the greatest deviation from the normal—namely, the lichen and pruritic groups—had a common symptom in itching which is most marked



in both conditions. It was, therefore, thought desirable to investigate the association of hyperglycæmia with itching.

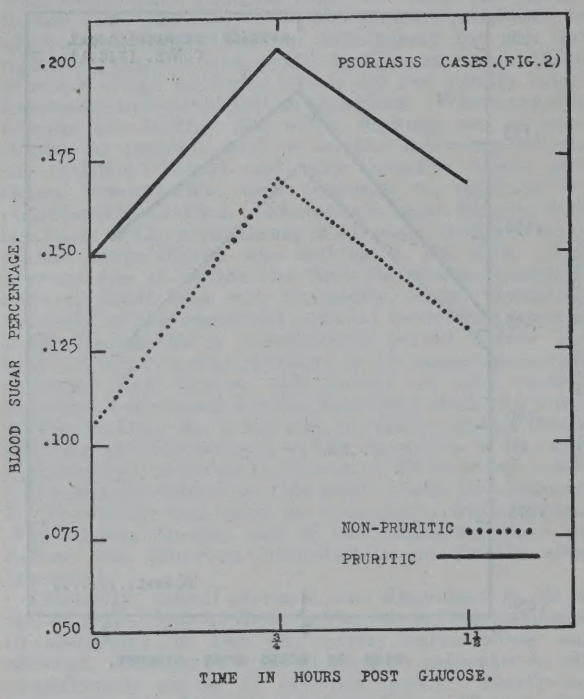
Symptomatic Classification.

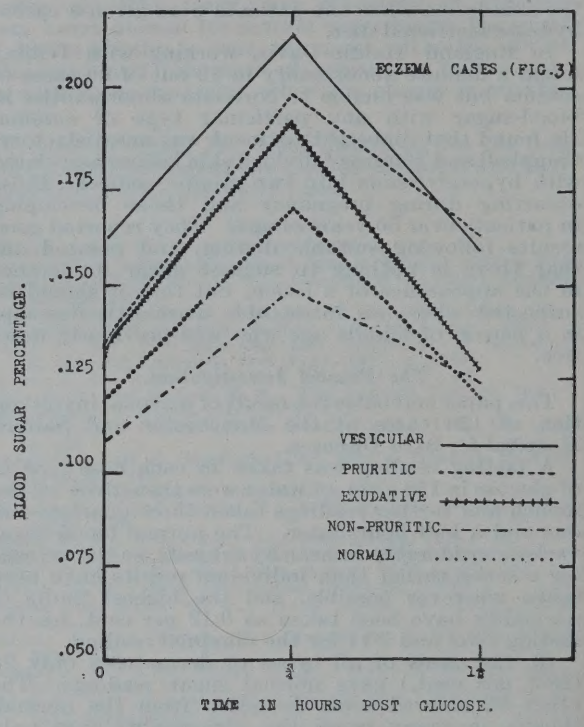
In considering the relation of pruritus to the presence of hyperglycæmia it is useful to have a lesion of definite pathology and clinical appearance in which pruritus is variable. Such a lesion is psoriasis vulgaris, which is a chronic inflammatory disease of the skin characterised by scaliness but in which there is no exudation.

In my series of psoriatic patients the disease was, to all appearances, identical in all the cases. Actively eruptive lesions were not tested, since pruritus is present in this form more or less constantly, but in cases of some weeks' duration pruritus is sometimes present, sometimes absent. The cases chosen were clinically in the same stage of the disease—that is, they were of some weeks' duration and the surface of the skin had not been made sore by the application of strong ointments. Eight out of 14 of these cases were associated with pruritus and gave an average curve of 0·151, 0·204, and 0·169 per cent., while the remaining six cases in which pruritus was absent gave a much lower reading of 0·104, 0·17, and 0·13 (Fig. 2).

In the cases of the eczematous group the problem presented more difficulties since the term eczema covers a number of lesions which vary considerably in clinical features. The cases were divided, therefore, into four classes according to the clinical stages of the disease. The first stage consists of an erythema without abrasion of the surface and accompanied by intense pruritus, which is termed the pruritic type of eczema. This may progress to the formation of papules which later become vesicles; pruritus is still intense; this is termed the vesicular type. One or two changes may now take place; either the vesicles become broken giving rise to a "weeping" eczema, or the skin may resolve into a dry, hardened, non-pruritic condition. These types are termed respectively the exudative and the dry non-pruritic type.

In examining the average curves given by these four subdivisions it was found that the vesicular type gave the highest reading with the pruritic type slightly lower in the first two readings and slightly higher in the third reading. The exudative type came next with readings higher than normal, and the dry non-pruritic type lowest, with a response to glucose less than the maximal normal (Fig. 3).





Type of eczema.	Pruritus.	Fasting.	Blood-sugar estimation per cent.	
			¾ hr. post-glucose.	1½ hrs. post-glucose.
Vesicular ..	Present.	0·162	0·217	0·158
Pruritic ..	,,	0·136	0·202	0·163
Exudative ..	Absent.	0·122	0·193	0·127
Dry non-pruritic	,,	0·108	0·148	0·124

The values below normal of the dry non-pruritic type are of interest and suggest a response on the part of the organism to the raised blood-sugar content present in the earlier stages of the disease.

In eczema, therefore, it appears that pruritus and the occurrence of any hyperglycæmia are directly related. In addition, however, the presence of an epidermal exudate is also associated with hyperglycæmia for so long as the exudate is retained in the tissues, but, when the exudate escapes externally, as in "weeping" eczema, the pruritus ceases and the hyperglycæmia disappears. This suggests absorption of the epidermal secretion as a cause of the hyperglycæmia.

In addition, 58 out of 67 (86·6 per cent.) patients who complained of itching showed some intolerance to glucose.

Discussion.

McGlasson found a hyperglycæmia associated with pruritus and the present results confirm this. It is, however, impossible to state dogmatically that hyperglycæmia will or will not be present in any given case.

Previous writers suggest that the hyperglycæmia points to the patients being potential diabetics. Many of the cases in this series were under observation for two or more years, and in no case was a true diabetes or even glycosuria noted; in addition only a few diabetic patients give a history of previous skin trouble. There seems to be no definite evidence, therefore, for the assumption that these patients are potential diabetics.

In America, restriction of carbohydrate in the diet has given good therapeutic results in cases associated with hyperglycæmia. In our hands dietetic treatment has not been satisfactory although restriction of carbohydrate diet does lessen the pruritus in many cases. Some writers have found carbohydrate restriction of use in the treatment of acne vulgaris; this has not been our experience, as might be expected from the fact that such lesions do not show any marked abnormality in carbohydrate metabolism. Whether we should regard the hyperglycæmia as an ætiological factor or as a concomitant condition is the subject of further research.

In conclusion, I should like to express my indebtedness to Drs. G. H. Lancashire, Louis Savatard, and R. Gibson for allowing me the use of their cases, and to Dr. William Dyson, who has given much useful criticism and advice in the preparation of this paper.

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2. Schwartz, Highman, and Mahnken: Jour. Cutan. Dis., 1916, xxxiv., 159.
3. Pick, W.: Derm. Woch., 1921, lxxii., 297; abs. Arch. Derm. and Syph., 1921, iv., 834.
4. McGlasson, I. L.: Arch. Derm. and Syph., 1923, viii., 665.
5. Haldin-Davis, H., and Willis, L.: Brit. Jour. Derm. and Syph., 1925, xxxvii., 364.
6. Campbell, G. G., and Burgess, J. F.: Ibid., 1927, xxxix., 187.

A "UNIVERSITY WARD" AT NOTTINGHAM.—Seven beds in Nottingham General Hospital have already been endowed with money raised by the students of the city's University College, and progress is being made towards the provision of an eighth. The students are ambitious of eventually endowing a complete ward of 20 beds, and it has been arranged that it shall be called "University Ward." The hospital has now received £20,000 on account of this year's Hospital Saturday Fund.

Clinical and Laboratory Notes.

THE ISOLATION OF *BRUCELLA ABORTUS* FROM A CASE OF UNDULANT FEVER.

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Dalrymple-Champneys [1] has collected records of 14 well-authenticated cases of undulant fever originating in England. Recently another case has been reported by Bloxsome and Davey.[2] The diagnosis of these cases has rested on the agglutination of *Brucella abortus* by the patient's serum. The following case is remarkable for the isolation of *Br. abortus* in pure culture from the blood.

Clinical Report by Mr. NIGHTINGALE.

The patient, Mrs. B., came under notice first on May 26th, 1929, with slight pyrexia of about 100–101° F. No symptoms beyond a little malaise were complained of. Between April 17th and May 6th she had spent a holiday on the continent, visiting Belgium, Germany, Austria, and Switzerland, the last week being spent in Switzerland.

In view of our ignorance of the incubation period of this disease it is impossible to say whether she contracted her infection abroad or shortly after her return to this country. There is likewise no evidence to indicate how infection occurred; she dislikes raw milk, and takes it only in tea or coffee.

Throughout the whole pyrexial period, lasting for some 13 weeks, there was a striking absence of symptoms and physical signs. The patient never looked ill and lost neither weight nor colour. The pulse-rate never rose above 70–80. When the temperature was at its greatest height she had a feeling of nausea and a great distaste for food, but beyond that there was nothing to note. There was no sweating and no pain.

The blood was tested for a Widal reaction early in the illness and proved negative. On July 12th a sample was sent to Dr. Knyvett Gordon at the Virol Laboratories, and he reported it as giving a negative Widal reaction to all the typhoid-paratyphoid group but as agglutinating *Br. abortus* in a dilution of 1/400. A further test on July 24th made by Dr. Wilson gave agglutination to *Br. abortus* in a dilution of 1/1280. Recovery, though tedious and slow, was complete, and the patient at the end of October was in full normal health. It may be said briefly that no form of medicinal treatment seemed to have the slightest effect on the course of the illness.

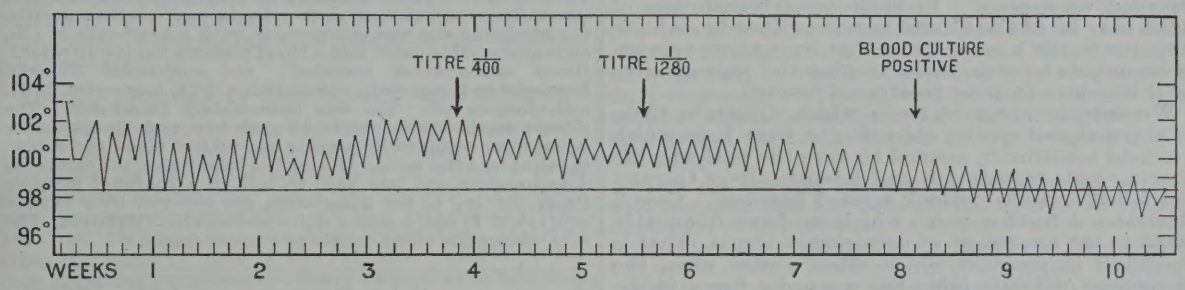
The accompanying chart, which was not commenced for three weeks after the onset of the illness, illustrates the undulant character of the fever, and the very gradual fall to normal.

Bacteriological Report by Dr. WILSON.

The patient's blood was collected on August 11th at about the beginning of the twelfth week of illness; 6 c.cm. were taken by Mr. Nightingale into a tube of glucose broth which was sealed with a special rubber cap and despatched by post.

On the next day the blood-broth mixture was distributed as follows: (1) 1 c.cm. into flask A, containing 50 c.cm. of Huddleson's liver extract[3] broth, pH 6·6; (2) 5 c.cm. into flask B, containing the same medium; and (3) 5 c.cm. into flask C, containing 500 c.cm. of glycerol broth, pH 7·2. The three flasks were put in a modified McIntosh and Fildes's jar, and 5 per cent. of the air in the jar was replaced by CO_2 from a cylinder. After incubation at 37° C. for four days the cultures were inoculated on to agar and glycerol agar slopes, which were incubated in 5 per cent. CO_2. As no growth occurred after five days these subcultures were discarded. A second series of subcultures were made from the flasks on the seventh day, using agar slopes only; one set of slopes were incubated in 5 per cent. CO_2, and one set were fitted with paraffined corks.

Two days later the agar slopes inoculated from flasks A and B, and incubated in 5 per cent. CO_2, showed discrete, circular, convex, translucent, greyish-yellow colonies, having a diameter of 0·2–1·5 mm. Microscopically these consisted of small Gram-negative cocco-bacilli, 0·8–1·3 μ long and 0·4 μ broad. Similar colonies appeared after five days in the sealed tubes inoculated from flasks A and B. The tubes inoculated from flask C remained permanently sterile; but in a third series of subcultures on to agar slopes, made after the flasks had been incubated for nine days, growth was obtained from all three flasks.



Temperature chart in a case of *Br. abortus* infection.

The organism that was recovered from the patient's blood was identified as *Br. abortus* for the following reasons. Besides having the typical morphological and colonial characters of this organism, it failed to ferment any of the usual sugars, it rendered litmus milk alkaline, it produced a small amount of ammonia from peptone water, and it blackened lead acetate medium in three days. For the first two or three subcultures it refused to grow aerobically, though it grew in sealed tubes in four or five days, and in 5 per cent. CO_2 in two days. Inoculated intramuscularly or intraperitoneally into guinea-pigs in a dose of about 500–1000 million organisms, it gave rise to no obvious illness; when the animals were killed after four to eight weeks the spleen was slightly enlarged and was covered with tiny greyish gelatinous nodules, projecting slightly or not at all above the surface; in two animals inoculated intramuscularly into the thigh the sublumbar glands were slightly enlarged; in the animal inoculated intraperitoneally two or three mesenteric glands were enlarged, and the testes were acutely congested. A serum prepared against the patient's strain agglutinated to titre a number of *Br. abortus* strains that were recovered from milk in this country by Wilson and Nutt in 1926.[4] Cross-absorption tests put up between the patient's strain and one of the bovine strains, using the sera prepared against these two strains, showed that both organisms were able to remove all agglutinins from both sera.

Four strains, reputed to be *Br. melitensis*, were available for testing; of these only two could be regarded with certainty as belonging to this species. Neither of these two known strains, nor a third strain, whose history was unknown, were agglutinated to titre by the patient's serum, nor were they able to absorb completely the agglutinins from this

[1] Dalrymple-Champneys, W.: Report on Public Health and Medical Subjects, No. 56. H.M. Stationery Office. 1929.

[2] Bloxsome, H. E., and Davey, E. N.: THE LANCET, Oct. 19th, p. 818.

[3] Huddleson, I. F., Hasley, D. E., and Torrey, J. P.: Jour. Infect. Dis., 1927, xl., 352.

[4] Wilson, G. S., and Nutt, M. M.: Jour. Path. and Bact., 1926, xxix., 141.

serum. The fourth strain, whose history was unknown, appeared to be antigenically identical with the patient's organism. A strain of *Br. abortus* of porcine origin, tested against the patient's serum, was agglutinated to only ¼ titre, and was unable to remove more than about 75 per cent. of the agglutinins.

It appears, therefore, from its morphological, metabolic, and serological properties that the organism isolated from the patient belonged to the species *Br. abortus* rather than to the species *Br. melitensis*, and from its serological properties that it conformed to the bovine rather than to the porcine type of *Br. abortus*.

THE IMPORTANCE OF TRANSFUSION IN THE TREATMENT OF PERNICIOUS ANÆMIA.

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THE introduction of liver therapy has entirely altered the outlook in pernicious anæmia, and the great majority of cases make a satisfactory recovery. In a considerable number, however, liver therapy fails or death occurs before liver therapy could reasonably be expected to succeed. In such cases transfusion of blood may be of the utmost service, either in giving a stimulus to the bone-marrow that liver alone appears to be unable to give, or in keeping the patient alive until response to liver treatment occurs.

We subjoin notes of cases which illustrate these points, and call special attention to Case 1, in which a second transfusion seemed to save the patient's life after a single transfusion and intensive liver therapy had failed and the outlook seemed hopeless. Case 2 illustrates a further point which we have frequently noted in the treatment of pernicious anæmia. That is the hitch in progress which often occurs when the percentage of hæmoglobin has reached a figure in the neighbourhood of 60. This difficulty is surmounted by a temporary massive dosage of liver and liver extract, and some ingenuity may be required in making the requisite quantity of extract acceptable to the patient. In this connexion some of the liver extracts on the market are useless.

CASE 1.—Male, aged 55, gunpowder worker, was first seen as an out-patient on May 30th, 1929, complaining of breathlessness, weakness, and a sensation of numbness of the fingers of seven months' duration. He gave a history of glossitis five months before the onset of his present complaint. He was thin and had a distinct lemon-yellow tint in the skin. His pulse-rate was 96 and his blood pressure 100; hæmic murmurs were audible. Appetite was poor and a test-meal showed entire absence of free hydrochloric acid, and a profuse growth of streptococci was obtained from the meal. No lesion of the nervous system could be detected. Blood examination revealed changes typical of pernicious anæmia, a striking feature being anisocytosis. He was sent home to be treated by his own doctor and ordered half a pound of liver a day.

The patient was seen again on June 11th, 1929, obviously much worse, and was admitted to hospital. The pallor of his lips and conjunctivæ and the lemon-yellow tint in the skin were very pronounced. Examination of the blood showed 1·15 million red corpuscles with 23 per cent. of hæmoglobin and reticulocytes 1 per cent. He was put on a dose of liver extract equivalent to 1 lb. of liver daily, but gauged by enumeration of reticulocytes there was no response, and on June 19th the red corpuscles had fallen to 0·89 million with hæmoglobin 15 per cent. and reticulocytes 1 to 2 per cent.

It was decided to transfuse him. The donor was the patient's nephew and the citrate method was employed. One pint of blood and one pint of saline were given. The patient had a slight rigor 1½ hours later with a maximum temperature of 100° F. During the next few days he suffered from gastro-enteritis and it was impossible to get him to take his full dose of liver extract. He steadily became worse. The reticulocyte count never exceeded 2 per cent. and the hæmoglobin fell to 12 per cent. on the 24th.

At this stage it was decided to transfuse him again. The same donor, the same method, and the same amount of blood and saline were used. One hour after the transfusion the patient had a severe rigor and the temperature reached 104°. On examining a film the day after transfusion the most striking feature was an invasion of nucleated reds, a feature which had been entirely absent up to this point. The reticulocytes rose steadily from 1–2 per cent. on the day of transfusion to 44 per cent. on June 28th, and then fell again to 2 per cent. on July 6th. The patient improved from the date of the second transfusion on extract equal to 1 lb. of liver per day. The following table shows the blood counts at different stages.

Date in 1929.	Red corpuscles in millions.	Hæmoglobin percentage.	Colour-Index.	Leucocytes in thousands.	Reticulocytes per cent.	Notes.
May 30th.	1·64	35	1·1	2·8	—	Out-patient.
June 11th.	1·15	23	1·0	2·6	1–2	Admitted.
,, 19th.	0·89	15	0·9	—	1–2	Transfused.
,, 24th.	0·52	12	1·2	—	1–2	,,
,, 26th.	0·75	18	1·2	—	10	—
,, 28th.	1·075	21	1·0	—	44	—
July 6th.	2·15	35	0·83	2·8	2	—
,, 25th.	3·35	56	0·9	3·0	—	—
Aug. 26th.	4·8	90	0·9	6·2	—	Discharged.
Sept. 25th.	4·9	98	1·0	7·8	—	Out-patient.

CASE 2.—A married woman of 37 was admitted on June 19th, 1929, with a history of progressive anæmia with intermittent attacks of metrorrhagia and gastro-enteritis. On admission she was unconscious, with a heart-rate of 130, an imperceptible pulse, and a blood pressure too low to record. Blood examination revealed: red corpuscles 355,000, hæmoglobin 8 per cent., colour-index 1·14, leucocytes 1200, reticulocytes nil. She was immediately transfused. The citrate method was employed and two and three-quarter hours were occupied in passing one pint of blood and a pint of saline into the vein. During the transfusion she recovered consciousness and was able to talk in a confused manner. From the day of her transfusion she received liver extract equivalent to half a pound daily and steadily improved. The table shows the blood counts at various stages.

Date in 1929.	Red corpuscles in millions.	Hæmoglobin per cent.	Colour-index.	Leucocytes in thousands	Reticulocytes per cent.
June 19th.	0·355	8	1·14	1·2	Nil*
,, 22nd.	0·67	12	1·0	1·4	1–2
,, 25th.	1·04	18	0·9	2·0	36
July 3rd.	1·86	32	0·9	—	5–6
,, 7th.	2·025	36	0·9	3·6	1
,, 22nd.	3·36	62	0·9	—	0·5
Aug. 2nd.	—	62	—	—	—
,, 5th.	4·2	75	0·9	—	—
,, 19th.	4·51	82	0·9	—	—

* Transfused.

The interesting feature is the fact that progress was arrested with the hæmoglobin at 62 per cent. When this occurred the dose of extract was doubled and raw liver added to the diet, after which the patient resumed her steady improvement and was discharged on August 19th, 1929, with 82 per cent. hæmoglobin.

CASE 3.—A married lady, aged 28, was seen by one of us in consultation with Dr. Fergus Hewat. She had become anæmic in the late stages of pregnancy and there was excessive bleeding at her confinement and some bleeding continued. The anæmia increased, and when seen three months later she was yellow, dyspnœic, distressed, and almost inarticulate. The red corpuscles numbered only 0·45 million. Megaloblasts were fairly numerous. The leucocytes were increase and included a few myelocytes. The diagnosis was pernicious anæmia complicated by hæmorrhage. As the condition seemed desperate an immediate transfusion was decided upon, and this was carried out by Mr. J. M. Graham. The result was most gratifying. Next day the anxiety and dyspnœa had gone and the patient was able to take liver extract. Films made four days after transfusion showed a remarkable picture of megaloblasts, many in mitosis, and some normoblasts with budding nuclei. For the last blood

count we are indebted to Dr. Hewat, who tells us that the patient made a complete recovery.

Date in 1929.	Red corpuscles in millions.	Hæmoglobin per cent.	Colour-index.	Leucocytes in thousands	Reticulocytes per cent.
May 23rd.	0·45	15	1·8	18	2
,, 27th.	1·39	28	1·08	16	20
June 24th.	4·1	82	1·0	—	—

Summary.

(1) Cases are recorded illustrating the importance of transfusion and, if necessary, of repeated transfusion in the severest examples of pernicious anæmia. (2) Progress in pernicious anæmia under liver therapy is often interrupted when the hæmoglobin percentage is in the neighbourhood of 60. This interruption may be tedious but can be overcome by massive doses of liver and liver extract. (3) It is important that only liver extracts of known activity should be used.

Medical Societies.

TUBERCULOSIS ASSOCIATION.

AT a meeting of this Association held at the British Institute of Radiology, Welbeck-street, W., on Nov. 15th, a discussion took place on the ætiology and treatment of

SEROUS EFFUSION IN ARTIFICIAL PNEUMOTHORAX.

Dr. W. STOBIE, opening the discussion on ætiology, said that the question presented many intricate problems, for the final elucidation of which a good deal more experience than he himself possessed was necessary, especially on the laboratory side. He had tackled the question from two aspects: from the point of view of the literature, and from his own personal experience. Many causes were adduced for the occurrence of serous effusion in artificial pneumothorax—the local anæsthetic, the cold air, too rapid filling, irritation of the gas, too much gas, pressure on the pulmonary vessels at the root of the lung, intercurrent affections, the introduction of minute portions of the tissues through which the needle has passed, over-exertion, menstruation, stage of the disease, injury of the visceral pleura, separation of adhesions, and so on. It was generally agreed, however, that age, sex, type of disease, or even the resistance of the patient, had little or nothing to do with the onset of an effusion. The speaker was convinced that the frequency of this complication was much greater than was generally believed, and was probably in the neighbourhood of 50 per cent. Many of these effusions could not be diagnosed without the help of the X rays. They should be on the look-out for a possible effusion when a slowing was noticed in the usual rate of absorption, or when on the manometer an unusually quick return occurred to the positive side. Among exponents of artificial pneumothorax there were extremely wide variations in technique, but there did appear to be one common factor—the separation of the pleural surfaces by the inflowing gas, whatever it might be. Moreover, in looking through a recent series of cases of his own, the one outstanding feature in those where fluid had developed was the presence of adhesions, generally in the upper part of the lung. It was more than likely that these adhesions were, as Dr. Gloyne had suggested, disease-bearing surfaces, which, undisturbed, were doing Nature's work of limiting the disease. Once they were stretched they were involved in the complication of hydrothorax. The stretching resulted as a rule from a combination of two closely allied forces—too large a volume of gas at too long an interval, especially a rapid jump from—e.g., 600 c.cm. to 1000 c.cm. after the lapse of several weeks. It was well to remind themselves from time to time that the original procedure in artificial pneumothorax was collapse of the lung and not compression—two very different things. The speaker also drew attention to the frequency with which fresh signs in the better lung or pleura had preceded the appearance of an effusion. Another point brought out was that the complication of serous effusion was more apt to occur in out-patients, who, freed from close medical care, were apt to take undue liberties in various directions.

The pathological examination of the fluid should theoretically give a good deal of help in determining the cause of an effusion in any given case. For example, where there was obvious extension of the disease the hydrothorax should be of the nature of an inflammatory exudate; while in the case of the compression of the vessels at the root of the lung the effusion should be of the passive transudate variety. The speaker hoped that in view of the importance of this side of the problem other speakers more competent to discuss it than himself would take it up.

Treatment.

Dr. F. G. CHANDLER followed with a paper on the treatment of pleural effusion in artificial pneumothorax. He pointed out that his remarks referred only to effusions of considerable size, since a small one, discoverable only by screening or a splash, he would always leave alone, unless there were some special reason for replacing it. Aspiration repeated two or three times frequently appeared to make the effusion thicken and become yellow. Moreover, even after the lung had been compressed for a long time by fluid it would re-expand, though it would often be smaller than formerly. The special reasons for interference included, in the speaker's opinion, the following:—

(1) If the effusion appeared to be producing a fever, after sufficient time had been allowed to give the pleurisy causing the effusion a chance of settling down.

(2) If in a case of moderate but progressive disease there was a fear, with a long-standing effusion, that the pleura would become so much thickened that the lung would never re-expand.

(3) If the effusion increased to such an extent that radiological control of the collapsed lung was no longer possible.

(4) If obliterative pleurisy was threatening.

(5) If a tuberculous empyema began to form, as evidenced by a thickening of the fluid and the appearance of large numbers of tubercle bacilli.

In group (4) replacement, though it might be tried, would probably prove ineffective and oil replacement should be undertaken. A complete oleothorax would not be necessary if the disease were in the upper part of the lung, for as the obliteration of the pleura proceeded from below upwards, the oil was driven to the upper part of the thorax where it was wanted. The oil generally used by the speaker was olive oil containing 5 per cent. gomenol, although for greater permanence liquid paraffin might be used. The amount of oil injected at a sitting varied from 5 or 10 c.cm. in cases of recent effusion up to two pints in cases where the fluid had been present for some time. Patients appeared to like an oleothorax and to be quite unconscious of the presence of the oil. Cases of tuberculous empyema were also best treated by replacement by antiseptic oil.

Discussion.

Dr. L. S. T. BURRELL said that effusion was most uncommon in artificial pneumothorax for any case but tuberculosis. For example, effusion was practically unknown in abscess of the lung or bronchiectasis. The fluid was therefore a true tuberculous effusion, and was not caused by hot air, cold air, or factors of this kind. Practically every

tuberculous patient was found post mortem to have adhesions, due to a previous pleurisy, and on theoretic grounds, therefore, they would expect to find pleural effusion in an overwhelming number of tuberculous cases. There were two groups of spontaneous pneumothorax cases: one of these cleared up quickly without the formation of effusions; the second group was complicated by fluid. These last were probably tuberculous. Dr. Burrell went on to discuss why one of the earliest sounds of fluid in the chest should be a metallic tinkle. Pressure at first was not raised, but on the introduction of a little gas it was raised. When fluid appeared in a case of artificial pneumothorax, a lung previously partly collapsed became completely collapsed. This was probably due to the fact that in the recumbent posture the fluid squeezed the air out of the cells and the lung did not then so readily re-expand. The presence of fluid was almost always associated with complete collapse of the lung.

Dr. S. R. GLOYNE said that the subpleural lymphatics were practically always infected in tuberculosis, and he suggested that this might account for the occurrence of an effusion and have a bearing upon the difficulty of absorption of the fluid. He thought that they were apt to undervalue the importance of the parietal pleura. Another point brought forward was the possible rôle of saprophytic organisms. It was difficult from a pathologist's point of view to believe that a needle could be inserted fortnightly over a long period without producing some degree of infection. He did not suggest that much harm was necessarily done, but he did think that these organisms might possibly be responsible for a certain amount of effusion, especially in lungs that were already damaged.

Dr. S. VERE PEARSON drew attention to a class of case, difficult to treat, in which the fluid appeared at two, or even three, levels, in different "pools." These cases required careful study by percussion and by stereoscopy, to ascertain which of the pools was of most importance, where it should be tapped, and so on.

Dr. G. MARSHALL suggested that effusions might be caused by trauma, especially in cases in which no local anæsthesia was used. With regard to the production of the coin sound he had found that it never could be produced in the cadaver, owing probably to the absence of tension in the walls.

Dr. G. T. HEBERT, speaking on the frequency of effusions in artificial pneumothorax, said that more than 80 per cent. of his patients probably developed this. In two cases of serous effusion in non-tuberculous patients, both of bronchiectasis, the fluid showed 70 to 80 per cent. of lymphocytes. The coin sound, he said, could be obtained wherever there was a big space and fairly rigid walls.

Another speaker drew attention to the value of infra-red rays in aiding the absorption of pleural effusions.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting on Nov. 14th a note on the

Treatment of Lupus Erythematosus by Bismuth

was read by Dr. R. M. B. MACKENNA. The consensus of opinion, he said, was that this disease was the manifestation of a chronic toxæmia. Three forms were commonly found to-day: the first exhibited erythematous scaly lesions; in the second there were indurated lesions with little scaling or erythema but with horny plugs in the orifices of the sebaceous and sweat glands; whilst the third type showed marked erythema but with few scales. Metallic bismuth and oxychloride of bismuth were, he thought, of equal therapeutic value in the treatment of lupus erythematosus. Intramuscular injections of sodium bismuth thio-glycollate had not yielded better results than those of other preparations. Bismuth given by the mouth and in an ointment basis were not of much value. It was impossible to say how much bismuth any given case would require, or for how long treatment would have to be continued. Of 24 cases treated by intramuscular injections of bismuth since March, 1929, about a quarter were discharged as cured, a quarter would shortly be discharged as cured, and the remaining half were making variable progress. He had no proof that the cases discharged as cured were really cured, and it was possible that bismuth injections might only cause a temporary intermission in the course of the disease; unfortunately he could not give any information about the mode of action of bismuth in lupus erythematosus.

Eruptions due to Fungi.

Dr. ELIZABETH HUNT gave a brief report on some forms of cutaneous eruption due to fungi. The organisms isolated on culture were yeast-like fungi (including red, white and pink cryptococci, monilia, endomyces, torula), and trichophytons, including epidermophytons. It was clinically impossible to distinguish the type of lesion due to the different organisms. Cases occurred, as a rule, as isolated instances in a household and indirect infection seemed most likely responsible. An individual susceptibility of the skin might be inferred, but required investigation. Temporary reduction of Fehling's solution by the urine was sometimes observed in the acute stages. Four clinical types of lesion were described: vesiculo-pustular, erythematous vesicular, irregular scaling patches, and thick scaly patches with fissuring. The common characteristics of these lesions were that they were superficial, localised, circumscribed, very chronic, and very intractable. Dr. Hunt described acute attacks in which the vesiculo-pustular type of lesion predominated. The eruption might be localised, but was often widely distributed or associated with a generalised eruption of lesions of the erythematous and scaly types. In these cases the same organism had been cultured from lesions on scalp, arm, and a nail. This kind of case usually showed a yeast infection. Some of the cases were typical examples of cheiropompholyx, and in these no generalised eruption was observed. Infection of the nail was common in about one-third of the cases. Dr. Hunt emphasised the importance of recognising the nature of these cases where the question of an occupational dermatitis was involved.

PATHOLOGICAL SOCIETY OF MANCHESTER.

AT the opening meeting of the session Mr. GARNETT WRIGHT delivered a presidential address to this Society on the subject of

Linitis Plastica.

He related how he had operated on two cases of this disease. At the time of operation he had considered them to be undoubted cases of cancer of the stomach, and he had done a partial gastrectomy on each case. He was surprised in both cases to get a preliminary pathological report stating that the condition was one of extensive fibrosis chiefly affecting the submucous layer of the stomach with no sign of malignancy. The first patient died shortly after operation and the second died nine months later from secondary growths in the peritoneum. Brinton, said the President, had been the first to give a clear and full description of the disease, which he regarded as an atypical form of cancer in which there was an excess of fibrous tissue strangling the invading epithelial growth. It was possible to demonstrate the carcinomatous nature of the disease by staining the epithelial cells with mucicarmine. Most of the cases that had been followed up had died from carcinomatous metastases.

Prof. SHAW DUNN showed an interesting series of microscopic sections of linitis plastica stained with mucicarmine.

A discussion followed.

Reviews and Notices of Books.

PHARMACOLOGY.

An Introduction to Pharmacology and Therapeutics. By J. A. GUNN, M.D., D.Sc. Edin., M.A. Oxon., Professor of Pharmacology in the University of Oxford and Fellow of Balliol College. London: Humphrey Milford, Oxford University Press. 1929. Pp. 220. 5*s*.

"WERE angels to write books," wrote Oliver Goldsmith, "they would never write folios." Prof. Gunn had this thought in mind when he applied himself to the task of writing his little book. Many writers of text-books, in their desire to make their work exhaustive, become diffuse, or, on the other hand, achieve brevity by compressing into smaller space the contents of the larger books rather than by writing eclectically. Prof. Gunn has skilfully avoided both pitfalls, and in brief compass has set forth a presentation of pharmacology and therapeutics. It is wonderfully complete for an introduction to the subject, and can be warmly recommended to the student.

Applied Pharmacology. Third edition. By A. J. CLARK, *M.C.*, B.A., M.D., F.R.C.P., Professor of Materia Medica and Pharmacology in the University of Edinburgh. London: J. and A. Churchill. 1929. Pp. 529. 15*s*.

IN the preface to the first edition of this book, published in 1923, Prof. Clark stated that his principal aim was to try to bridge the gap between pharmacology and therapeutics, and to demonstrate as clearly as possible the connexion between the two subjects. That there existed a considerable demand for such a book is plain, since a second edition appeared in 1927, and now within two years we have to welcome a third. All the chapters have been revised, and some of them rewritten in the light of the knowledge obtained from recent investigation. Two new chapters have been added, one on the pharmacology of the skin, written in collaboration with Dr. G. H. Percival, and one on inorganic metabolism. The latter deals with the "milieu intérieur" of the body, and discusses the interesting question of water intoxication, which is at present regarded mainly as a laboratory phenomenon, but may have some bearing on the symptomatology of nephritis. The book gives a clear account of the most up-to-date physiological and pharmacological opinions. It gives a summary rather than a critical survey of modern views, and in some sections we would have appreciated a more judgmatical tone from a pharmacologist of such authority. But the book has achieved great popularity in its present form and thoroughly deserves further success.

CEREBRO-SPINAL FLUID IN HEALTH AND DISEASE.

Third edition. By ABRAHAM LEVINSON, B.S., M.D., Associate in Pediatrics, Northwestern University Medical School; Attending Pediatrician, Children's Hospital of the Cork County Hospital, Chicago. London: Henry Kimpton. 1929. Pp. 386. 35*s*.

THE fact that this edition is enlarged by more than 100 pages is an index both of the growth of our knowledge of the cerebro-spinal fluid since 1923 and of the author's endeavour to incorporate this new knowledge in his book. Among the additions we note particularly a considerable enlargement of the chapter dealing with the characters of the cerebro-spinal fluid in various diseases, and a new chapter on the fluid in infants and children. Additions have also been made to most of the other chapters, notably those on the anatomy of the structures associated with the cerebro-spinal fluid and on methods of examination of cerebro-spinal fluid for diagnostic purposes. Several gaps, however, remain to be filled. For example, there is no mention of the perivascular channels or Virchow-Robin spaces which, according to recent work, contribute largely to the cellular content of the fluid in various forms of encephalitis and myelitis; and although many new tests are described only one method for estimating the total protein and only three of the many colloidal tests are given. The omission of De Thurzo's bicoloured mastic and benzoin reactions, which are a distinct improvement on the original form of these tests, is a matter for regret. The subject of neurosyphilis merits more than the scant three pages which are devoted to it in this as in previous editions of the book. Apart from these omissions, criticism may be directed to the author's theory of the pathogenesis of the changes which occur in the fluid in diseases other than meningitis. Most of these changes are assumed to be due to "irritation of the meninges," which may be caused by chemical poisons, by the toxins emanating from a focus of encephalitis or brain abscess, or by the pressure of a cerebral tumour. This is one of those apparently simple explanations which become more difficult the more deeply they are probed. It leaves out of account many physical factors, such as venous obstruction and œdema of the brain, which produce changes in the fluid but which have no relation to the meninges. And it gives no help in any attempt that may be made to deduce from the changes in the fluid the nature or situation of the pathological condition which is causing intracranial hypertension.

These defects are, however, balanced by the large amount of information which the book contains in a very readable form, and by the numerous tables which supplement the text, and make the book a convenient work of reference. The bibliographies which follow each chapter are large and detailed and must prove of great assistance to those who wish to inquire more deeply into the many unsolved problems connected with the cerebro-spinal fluid.

THE NERVOUS SYSTEM.

An Introduction to the Study of the Nervous System. By E. E. HEWER, D.Sc., Lecturer in Histology and Assistant Lecturer in Physiology, Women's School of Medicine, London; and G. M. SANDES, M.B., B.S., Demonstrator of Anatomy at the Women's School, and Surgical Registrar at London Lock Hospital for Women. London: William Heinemann, Ltd. 1929. Pp. 104. 21*s*.

THIS book is primarily intended for students, and seems to be admirably fitted for its purpose. The clearness and simplicity of its description, and in particular the excellent grouping of connexions and tracts, will do much to obviate the dissatisfaction which must accompany the learner's search for facts throughout the multiplicity of authoritative works. The subject is treated from the physiological rather than from the anatomical standpoint. There appears to be a disposition on the part of the authors to send more traffic across the dorsal commissural bridge of the cord than it was built to carry. Whether this suspicion is well founded or not, however, makes no difference to our keen appreciation of the book. It is well produced, clearly printed, and illustrated by many good diagrams of the physiological type.

NUTRITION OF HEALTHY AND SICK INFANTS AND CHILDREN.

Second edition. By E. NOBEL, C. PIRQUET, and R. WAGNER. Translated by BENJAMIN M. GASUL, B.S., M.D. Philadelphia: F. A. Davis Company. 1929. Pp. 243. $3.50.

IN reviewing the second edition of this work last year we paid tribute to its originality and thoroughness, while expressing doubt as to whether the Pirquet system of nutrition was destined to penetrate beyond academic circles in other countries. In the meantime it has received some further measure of attention as a result of the tragic death of its originator, and the recognition throughout the world of his

great services to pædiatrics. Dr. Gasul has now placed this work, originally published by Dr. Nobel, within the reach of all English-speaking readers, and we feel sure that his labour will be justified by the number of doctors who will find interest in its pages. Certain facts remain as a bar to the adoption of Pirquet's system in England and in America. First, one of the ideas which underlies Pirquet's hypothesis—that the balance of fat and carbohydrate is unimportant—is not in accordance with current opinion. Secondly, the fear, probably well founded, that the adoption of a far more complicated method of calculation would lead to diminished practical efficiency will deter teachers from advocating the general use of this system, much though they may find in it to admire. Nevertheless, those who are interested in nutrition, and in the treatment of alimentary disorders, cannot neglect the school of thought exemplified in this work, and will find in the arguments set out much common sense.

SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS.

Was muss der Praktische Arzt von der Chirurgischen Behandlung der Lungentuberkulose Wissen? By Dr. HANNS ALEXANDER. Munich: J. F. Lehmanns. 1929. Pp. 60. M.3.

THIS monograph, which is one of a series issued by the *Münchener Medizinische Wochenschrift*, gives a clear and concise account of the modern surgical methods of dealing with pulmonary tuberculosis. It is designed to help the practical physician who is not an expert in tuberculosis. There is a fairly full description of artificial pneumothorax with an account of the technique and complications, and a discussion on the types of case. Bilateral collapse therapy is given but little space. The operations of thoracoplasty and phrenic evulsion are described at some length; the combination of phrenic evulsion and artificial pneumothorax treatment is briefly noticed, as is the older operation of pneumolysis with paraffin wax. In all cases indications for particular forms of treatment advocated are clearly given. Numerous illustrations are included. Amongst these are four very instructive radiograms showing the after-results of spontaneous healing with retraction, and the good results after phrenic evulsion, artificial pneumothorax, and thoracoplasty.

SYMBOLIC PROCESS.

Its Integration in Children. By JOHN F. MARKEY, Research Professor in Sociology at the Connecticut Agricultural College. London: Kegan Paul, Trench, Trübner and Co., Ltd. Pp. 177. 10*s.* 6*d.*

THAT the child is the father of the man is amply demonstrated in the most recent approaches in psychology. Prof. Markey's book on the growth and elaboration of symbols in human behaviour—individual and social—is almost entirely expressed in behaviouristic terms and should thus prove attractive to physiologists, particularly neurologists. There is a simplicity in the behaviouristic approach to mental activity and human behaviour which appeals to those who show a single-needed devotion to laboratory technique and a trust in the results that it gives. But behaviourism cannot stand on that alone. It must be subjected to the logical categories inherent in the material with which it deals, and it has selected only part of the material—that is objective data without reference to those facts which are called mental. Prospective reference and persistence with varied efforts—terms we owe to Stout and Lloyd Morgan—enter, we think, into all mental growth, and therefore into the creation of symbols, individual and social. It is equally a matter of doubt whether the theory will survive the devastating criticism of Koffka and others of the Gestalt school of psychology. No discussion of ultimate principles, however, will diminish the practical value of this book. There are chapters on personal symbol formation and the influence of social relations which are altogether admirable, and to all those who engage in the study of the child mind the essay will repay close study for the facts and investigations alone, quite apart from the difficulties in theory which rise like spectres in every chapter.

MAN AND ANIMALS IN THE NEW HEBRIDES.

By J. R. BAKER, M.A., D.Phil. London: George Routledge and Sons, Ltd. 1929. With 43 plates and text-figures. Pp. 200. 12*s.* 6*d.*

THIS is a gay and most interesting account of the author's experiences and observations in the South Seas. Apart from the more purely zoological parts, which are chiefly for specialists, he discusses two subjects of wide interest. Following Rivers, Buxton, and others he has investigated the depopulation which has been so marked a feature of these islands in recent years, and has advanced on the work of his predecessors by getting a good deal of numerical information. He finds a remarkably high proportion of males to females (160 to 100), which is a contributory cause, and the rest he attributes to diseases brought by Europeans and to abortion; he gives no support to Rivers's conclusion that the chief reason for depopulation was the lack of interest in a life which had by white man's government been pruned of its ritual and excitements. The other curiosity is the hermaphrodite (intersex) pigs which are quite common and play a large part in determining the owner's rank in the social scale. Dr. Baker naïvely assures us (p. 39) that his qualification for dealing with such subjects as depopulation is "a thorough education in biology and scientific method," which is perhaps why he says (p. 115) that all snails are hermaphrodite!

DENTAL INFECTION AND SYSTEMIC DISEASE.

By RUSSELL L. HADEN, M.A., M.D., Professor of Experimental Medicine, University of Kansas. Philadelphia: Lea and Febiger. Pp. 165. $2.25.

MUCH has been written on the subject of dental infection and systemic disease but comparatively little of it has dealt with the experimental side, while this book is mainly concerned with the experimental basis for the theory of dental focal infection as a factor in general disease. Dr. Haden reviews the subject in a moderate spirit, and records the results of his own extensive experiments with critical judgment. An important feature of the work is the correlation of the radiographical, histological, and bacteriological aspects of dental infection whereby Dr. Haden succeeds in conveying an all-round conception of dental sepsis and its sequelæ. He uses the bacteriological technique advised by E. C. Rosenow and has succeeded in confirming Rosenow's experimental findings on elective localisation. These results have been much debated and most bacteriologists regard elective localisation as still unproven. Dr. Haden states that failure to produce Rosenow's results is due to a disregard of certain fundamental technical details, especially a correct oxygen tension and the use of special culture media. The comparison made between the bacteriological findings in cases of infected teeth with positive radiographic changes on the one hand, and pulpless teeth with negative radiographic evidence on the other, is interesting. Quantitative cultures show that a high percentage of the teeth in the last-named group are heavily infected, although the radiograms may show no evidence of bone changes. The last part of the book consists of 35 case reports illustrating various forms of systemic infection associated with dental sepsis. In all cases the diagnosis was based on careful bacteriological examination followed by animal inoculation. They form a group the more striking because all the data available have been carefully evaluated. We recommend this book both to doctors and dentists.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 30, 1929.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND: THE POSITION OF MEMBERS.

WE notice in another column the occurrence of the annual meeting of the Fellows and Members of the Royal College of Surgeons of England which was held on Nov. 21st; the spirit and temper of the meeting was such as to encourage the hope that a reform, which has been pressed for in the columns of THE LANCET for over 80 years, may come up for serious consideration by the authorities of the College. In the early days of THE LANCET the frequent text of editorial articles was the existence of certain abuses in the College, and when the Charter of 1843 was obtained, changing the name of the College to its present style and instituting the order of Fellows, criticism was not abated, although some of its earlier grounds were removed by the new Act. For it was perceived that, although the new Charter had abolished the absurdity in a progressive and scientific calling of a small and self-elected governing body who could hold, and who alone could hold, perhaps for life, the examinerships designed to be the tests of proficiency among their juniors—although this vestigial trait of a trading corporation had now disappeared from the constitution of the College, there remained an illiberal provision, depriving the mass of the corporation from any voice in the conduct of their affairs. The officers of the College under the new Charter were, under altered titles, the same authorities as those who had previously been in power, and to them the discretion was given of selecting the first body of Fellows. It is true that it was provided that no more persons, after the lapse of one year, should be elected Fellows except after examination, but the examinerships remained in the hands of legitimate descendants of the old Governors, while the new rulers were only to be chosen by the vote of the Fellows and from out their own body. Granted that the senile examiner no longer inquired into the proficiency of the new recruits, still the new Council represented the old Court of Assistants, and the new Council selected the first body of Fellows, and the Charter gave to the Fellows, and to the Fellows only, the right of filling up vacancies in the Council as they occurred. The Charter invited criticism, and has obtained it since its birth.

Now it is a remarkable testimony to the way in which the affairs of the College have been managed since 1843 that, although the weakness of the constitution has been pointed out with reiteration, and although from time to time individual and group remonstrances have been addressed to the rulers and voiced in the medical and lay press, nobody has been found to say that the affairs of the College have been badly managed or that the Council has been other than a competent and representative group of men, true and just in their dealings. So much is this the case that successive Presidents have been able to point out, when challenged, that the reluctance of the Council to secure for the Members a place in the management of College affairs has been due to lack of evidence that either the conduct of the College or the status of the Members has been injured by the provision of the Charter leaving the election of the Council in the hands of the Fellows. But it is one thing to say that an institution has not suffered through a loss of something and another thing to say that that institution would not have gained under modification. The College authorities have certainly been open to the accusation of self-satisfaction in taking no steps to consider what measure could be taken, within the provisions of the appropriate Act, to give to the Members an adequate expression of their desire to play their part in the activities, policy and development of the College. It may be said that at one time the Council has been asked to consider the extending of voting powers for seats upon the Council to the Members, and at another to arrange that a certain proportion of Members should have seats upon the Council; and that the two things not being the same no regulations of a reforming character would provide for both. But the difficulty has been pointed out many times, and could be removed at a meeting between the College and properly accredited leaders of reform, the one side saying exactly what they wanted, and the other what could be granted without the hideous task of securing a new Act of Parliament.

Alike because surgery is so living a thing and because the bulk of English practitioners are Members of the Royal College of Surgeons of England, it seems right that this question should receive serious attention with a view to settlement. In past times various Presidents of the College have had no difficulty whatever in refusing to listen to the claims of the Members, because sometimes those claims were put forward in a manner entirely prejudicial to those who were making them, and because on other occasions the vaunted support of numbers could not be proved. But to-day things are altered, for one of the main reasons for instituting an order of Fellows is disappearing. It was the abuse of the senile examiner that led to the institution within the College of an order of higher academic position, designed to form the material whence a court of examiners could be chosen, whose equipment should be level to the progress of their science. To-day this argument has no force, when all degree- and diploma-granting bodies have to choose examiners who have no internal connexion with the particular university or corporation, but who possess the paramount claim of familiarity with their subjects. With the disappearance of this argument for maintaining a deep gulf of distinction between the Fellows and the Members, the road to rapprochement becomes plainer. Frankly we wish that some overt move towards that road could be taken.

SUSCEPTIBILITY TO CANCER.

ALL who are interested in the cancer problem will welcome an authoritative statement on the present state of this problem which appears in the Twenty-seventh Annual Report of the Imperial Cancer Research Fund for 1928–29. In previous years comments on general aspects of cancer research have been included in the Director's Report. It is now intended to make such discussions a special feature of the annual reports, and this year Dr. W. CRAMER supplies a critical commentary on Experimental Carcinogenesis. Here is reviewed, in non-technical language, the work of the last ten years on the experimental production of cancer. Dr. CRAMER points out that some of our fundamental conceptions of cancer have been modified as the results of recent experimental work. Thus the peculiar age incidence

of cancer was formerly interpreted as showing that cancer arises in an organ or in tissues which are senescent. Experimental investigation of carcinogenesis has shown that the development of tar cancer requires a long period of induction. In the mouse the period of induction is hardly ever less than three to four months, but may be much longer—eight to nine months. In man the period of induction can be estimated from cases of occupational cancer; the minimum is seven years, the maximum as high as 20 years. At first sight there seems to be no obvious relationship between the figures for mice and men. But when one considers that the maximal span of life is three years for a mouse and 90–100 years for man, it becomes clear that three months represent approximately the same fraction of its span of life as seven years of human life—an example of a relationship for which Dr. CRAMER suggests the name of biological relativity. This relationship may be found to hold good for many biological processes, which proceed more quickly in the cells of the short-lived animals than in cells of long-lived organisms. That the long period of induction is the correct explanation of the peculiar age incidence of cancer is now fairly generally held by those who have followed recent experimental work on cancer. A conception which is more revolutionary and far-reaching and is likely to meet with some opposition is the doctrine put forward by Dr. CRAMER that susceptibility to cancer is a determining factor in its incidence. The implications involved in this doctrine will be made clear by its comparison with the orthodox view. In a recent rather pessimistic paper Prof. JAMES [1] EWING expresses the opinion that the problem of the ultimate nature of the cancer problem is "one of those types of information which will long escape the human mind." But he regards as one of the most important steps made in the investigation of cancer the recognition of the fact that cancer is not a single disease but a whole host of diseases. "We know," he says, "that there are just about as many clinical entities in the group of cancer as there are outside of them." There exists also a considerable body of knowledge regarding the various forms of chronic and specific irritation which are known to be necessary to the incidence of cancer. The difference between a person who develops cancer and one who remains free from it is that in the former person one organ has been subjected to chronic irritation while the habits and mode of life of the latter have been such as to avoid chronic irritation. On such a conception it is reasonable to expect that the incidence of cancer could be diminished if we traced for each organ the forms of chronic irritations which lead to cancer and, having gained the knowledge, took steps to avoid them.

Dr. CRAMER advances statistical, clinical, and experimental evidence to show that such a view is too simple. The statistical data given in last year's annual report show that the total mortality from cancer in women is approximately the same in different countries, from which statistics of equal re liability are available, although the organ incidence varies greatly. Similarly, the total mortality in men and women of the same country is approximately the same, although the organ incidence necessarily shows considerable differences. If cancer were a whole host of diseases, each organ having a separate ætiology and representing a self-contained unit, the total incidence of cancer would have to be regarded merely as the sum of the incidence in the different individual organs and should increase or decrease as the incidence on this or that organ increases or decreases. The statistical evidence shows that this does not happen, but that some mysterious law of compensation appears to be at work, which provides that whenever in a comparison of two populations there is a markedly lower incidence of cancer in one organ, there is a correspondingly higher incidence of cancer in at least one other organ. This mysterious law of compensation finds an explanation in the fact, which can be demonstrated experimentally and which also appears from the clinical evidence provided by occupational cancer, that the same forms of chronic irritation applied in an approximately equal degree do not produce the same effects in different individuals. In some cancer appears after a relatively short interval, in others after a much longer period, while a third group remains free from cancer. In occupational cancer, for instance, the number of individuals who develop cancer are only a fraction of the number who have been exposed to the specific chronic irritation. Cancer and freedom from cancer are, therefore, not merely a question of presence and absence of chronic irritation. The susceptibility of the organism to respond to chronic irritation with cancerous growth enters as an important factor. It determines the number of people who, as the result of the various forms of chronic irritation incident in our lives, will develop cancer. That approximately the same number of men and of women develop cancer while the organ incidence in the two sexes shows considerable difference is, from this point of view, the expression of an equal susceptibility in the two sexes. Since in women breast and uterus are two organs particularly exposed to chronic irritation, a considerable number of women die as the result of cancer of these two organs and therefore the number of susceptible women who can develop cancer of the other organs are correspondingly diminished, as compared with the number of susceptible men. The argument is closely reasoned and should be carefully studied. It leads naturally to the conclusion that "freedom from cancer is more likely to be attained by diminishing the susceptibility to cancer than by trying to hunt down the various forms of chronic irritation to which we are exposed and devising means to avoid them." Investigations are being carried out to determine, if possible, the factors on which susceptibility depends.

The Director of the Fund, Dr. J. A. MURRAY, F.R.S., in his report summarises the work published from his laboratories in the year under review. The work on the filtrable tumours of the fowl by Dr. A. M. BEGG has been recently reviewed in our columns.[2] Mr. H. G. CRABTREE has continued his studies on the metabolism of cancer cells by applying O. WARBURG'S method to a great variety of strains of transplantable mouse tumours. The result is a confirmation of WARBURG'S discovery that malignant cells possess the faculty of splitting sugar into lactic acid to a far greater extent than normal cells. This property, however, is not specific for malignant cells, so that it cannot be applied as a criterion of malignancy. But since the type of metabolism possessed by cancer cells must determine to some extent their biological behaviour, it is an explanation of some features of malignancy. It would be a mistake to underrate the importance of this discovery because it does not reveal the whole secret of cancer. Of considerable interest is the work of Mr. R. J. LUDFORD, D.Sc., on vital staining of malignant cells. Cells are said to be vitally stained when they are able to take up certain dyes and segregate them in the form of droplets during the lifetime of the animal. The idea underlying Dr. LUDFORD'S investigations is that there is an essential similarity between

[1] Cancer as a Public Health Problem. Public Health Reports, 1929, xliv., 2093.

[2] THE LANCET, Oct. 26th, 1929, p. 886.

the process of vital staining by certain dyes and the chemotherapeutic action of metallic colloids. These colloids, when injected intravenously, are taken up by a certain type of cell, the macrophage, which also has a high capacity for becoming vitally stained. The cells of malignant new growths do not stain vitally to the same extent as their normal prototypes. This raises the interesting question whether the action of metallic colloids is not an indirect one, exercised through the macrophage type of cell. The point is of importance in view of the therapeutic results obtained by means of colloidal lead. Dr. MURRAY, referring to the work of Dr. A. T. TODD of Bristol, who has worked out a modification of the colloidal lead treatment originally introduced by Prof. BLAIR BELL, states that Dr. TODD'S results "prove conclusively the possibility of bringing about the disappearance of some tumours, definitely malignant, with prolongation of life by the intravenous injection of certain colloidal lead preparations." This result could be obtained only in a percentage of the cases to whom this treatment was applied, and in some cases in which regression of the primary tumours took place some of the metastatic growths proved resistant to the action of lead colloid. The evidence indicates that the action of the lead colloid is not a direct toxic one but that a more complicated mechanism is at work.

In recent years the literature of cancer has not been free from a sensationalism unfitting to this grave subject. Observations have been offered on the problems of the treatment and the ætiology of cancer which are based on inadequate evidence. On the other side there has to be fought the sterile pessimism of those who believe the problem to be unsolvable. The annual report of the Imperial Cancer Research Fund always steers a safe course between these two extremes. The difficulties inherent in the problem are admitted; the failures are not concealed; credit is given to successful work done in other laboratories; and the general tenor of the report shows the steady advance in our knowledge which is the reward of patient work.

WHAT SCHOOL-CHILDREN DIE OF.

THERE seems to be a fairly widespread opinion among the laity at the present time that the commonest cause of death among school-children is the motor-car. And indeed, in Sir GEORGE NEWMAN'S report on the Health of the School Child [1] for 1928, violence—presumably most frequently received in street accidents—ranks second only to tuberculosis as a cause of death between the ages of 5 and 15 years. Yet nowhere in the book are preventive measures discussed or recommended; "violence" seems to be regarded by the authorities as an act of God, and is treated with the same respect as that which the ancients accorded to epilepsy. Surely protection of life against this danger is as important as against any other, and should equally be the concern of educational authorities. It is with the prevention of disease, however, and especially infective disease, that the report is especially concerned.

Tuberculosis in its various manifestations accounted for 2173, or 16·4 per cent., of the total deaths and remains the chief menace to life among children of school age, but the report includes tables showing the marked decline in this disease since 1907. That variations in conditions and food have an important bearing is indicated by the rise in mortality due to this disease during the four years of the late war. An efficient school medical service is the most valuable factor in obtaining early diagnosis as a preface to thorough preventive and therapeutic measures. Meningitis and other diseases of the nervous system were responsible for 1116, or 8·4 per cent., of the total deaths of the year. The problem of fatal nervous disease following vaccination has attracted considerable attention; in 1928 out of a total of 55 "post-vaccinal nervous diseases" in the whole country, 39 occurred in children between the ages of 5 and 14 years, and of these 19 were fatal. It was pointed out by the Rolleston Committee that this manifestation was extremely rare after revaccination and after vaccination in early infancy. The danger is to the child between 5 and 15 years who has not been previously vaccinated. Measles remains a serious danger to childhood by reason of its complications; much has been done to avoid these by instructing parents in the dangers of the disease, by health visiting, and by the power of the local authorities to provide nursing and medical assistance in epidemics. But the incidence is unaffected by these measures, and is greatest in overcrowded and insanitary slum districts, and among children under 5 years of age. As the mortality is much less among children above this age, the attention of the school authorities at present is directed to postponement of incidence to later ages, to provision of early and adequate nursing treatment, and to early diagnosis of the disease and removal of the infected child. The case-mortality per cent. of diphtheria, since the introduction of antitoxin in 1895, has decreased from 30 to 3 per cent., but, as if partly to balance this enormous gain, the incidence has remained higher during the last nine years than for many years before the war, and in 1928 the disease was responsible for 1565, or 11·8 per cent., of the deaths at school age. Sir GEORGE NEWMAN advises a wider use of the Schick test for determining susceptible individuals; over 90 per cent. of children under 5 years are susceptible, but immunity increases with age. Immunisation has been much improved during the last few years, and three doses of toxoid and antitoxin will now secure complete immunity in 80 to 90 per cent. of children. As the immunity takes a few months to develop the method should not be employed during an epidemic, and 17 local authorities in and around London are offering facilities for immunisation. The immunity lasts for not less than seven years in 95 per cent. of persons. It is obvious what a valuable protection would be offered by a wider use of this preventive measure. The experimental and investigational diphtheria carrier clinic at Guy's Hospital has lately produced its first report. In this the cure of carriers by means of operative

[1] Annual Report of the Chief Medical Officer of the Board of Education. Stationery Office. 1s. The principal causes of death among the children of England and Wales aged 5–15 in the year 1928 are given as:

Disease.	Number of deaths.	Per cent. on total deaths.
1. Tuberculosis	2,173	16·4
2. Violence	1,607	12·1
3. Diphtheria	1,565	11·8
4. Bronchitis, pneumonia, and other respiratory diseases	1,526	11·5
5. Meningitis and nervous system	1,116	8·4
6. Heart disease	822	6·2
7. Measles and whooping-cough	554	4·2
8. Rheumatic fever	513	3·9
9. Appendicitis	472	3·6
10. Acute and chronic nephritis	276	2·1
11. Acute infective osteomyelitis	255	1·9
12. Influenza	237	1·8
13. Scarlet fever	231	1·7
14. Tonsillitis, &c., adenoid vegetations	200	1·5
15. Other conditions	1,733	12·9
	13,280	100·0

and other treatment is discussed, and the conclusion reached that it is simpler and cheaper to make use of the Schick test and immunisation.

Acute rheumatism and heart disease were between them responsible for 1335, or 10·1 per cent., of the deaths at school age in 1928, and the cardiac complications of rheumatism in its various forms play an important part in disabling children and interfering with school attendance. Perhaps more thought has been given to the care and treatment of the rheumatic child by the educational authorities than to any other type of case, but the only prophylactic measures at present known are general care of the child, healthy surroundings, and, according to Prof. C. W. VINING, "a well-balanced diet from infancy onwards." Dr. JAMES FENTON, medical officer of health for Kensington, in reporting on the first year of the rheumatism scheme in operation there, is of opinion that notification is only of value if it leads to early treatment of cases. The aim in the supervisory centres and clinics is to regulate the life of the child according to its clinical condition. Dr. NAIRN DOBBIE deprecates the exclusion of a child from school without just cause, for with many children school conditions are preferable to those obtaining in the home. Cases may be divided into those which can attend school without restrictions, those which require restriction in the matter of games, those which can receive treatment at school those which require exclusion from school and treatment in the home, and those which require institutional treatment or opportunity for convalescence. These measures should go far to reduce the disabling effects of rheumatic manifestations. Respiratory diseases play a large part in the cause of child mortality, especially under the age of 5 years, and were responsible for as many as 1526, or 11·5 per cent., of the total deaths at school age. Other causes of death are of relatively small account. In 1928 appendicitis was responsible for 3·6 of the total deaths between 5 and 15 years, nephritis for 1·2 per cent., and acute infective osteomyelitis, influenza, scarlet fever, and tonsillitis for percentages ranging between 1·5 and 1·9.

Practically all the principal causes of death among school-children, with the exception of violence and appendicitis, are encouraged by overcrowding, faulty sanitation, unsuitable or insufficient food, and unhygienic surroundings. In short, conditions prevailing in slum districts help to distribute and maintain these disorders. The discovery and use of methods of protection against individual diseases cease to benefit us, and may indeed become a danger, if they encourage us to tolerate conditions which breed disease. Better housing, better sanitation, more accommodation—these are the factors required to reduce the child mortality among us; when these are obtained such valuable measures as vaccination and diphtheria immunisation will take their proper place in the scheme—as our second, not our first line of defence.

RADCLIFFE INFIRMARY, OXFORD.—It is announced that a provisional arrangement has been made by which Sir William Morris, the motor-car manufacturer, will purchase the Radcliffe Observatory and its grounds for £100,000. The Observatory itself is being removed to South Africa, and Sir William will hand over the site to the Radcliffe Infirmary, which is to begin extensions in a few months. Sir William Morris's gifts to the hospital already amount to £80,000, and it will be remembered that among other benefactions he has given £104,000 to St. Thomas's Hospital.

Annotations.

"Ne quid nimis."

THE C.M.B. ON ITSELF.

THE Central Midwives Board has riposted with vigour to the suggestions, contained in the report [1] of the Departmental Committee, that its membership should be reduced and its powers to approve training institutions and teachers should be transferred to the Ministry of Health. The duties of the Board as conferred upon it by the Act of 1902 are, it is pointed out,[2] threefold; they include the framing of rules for the training and registration of midwives and the regulation of their practice, the investigation of misconduct, and the publication of a list of midwives legally entitled to practise. The present constitution of the Board, on which are represented all the bodies especially interested in the education and the work of midwives, is held to have answered its purpose very well since 1921 when it came into force, and any limitation in its membership would result in the interests concerned no longer being properly represented. The Board is at pains to correct the impression that it is in any way responsible for the irregular character of the maternity service throughout the country. Its aim is a comprehensive maternity scheme which will make complete provision for:—

(*a*) Medical examinations during antenatal period.
(*b*) The full services of a certified midwife or, alternatively, a doctor and a midwife acting as a maternity nurse.
(*c*) The services of a doctor when required.
(*d*) The services of a specialist on the doctor's request.
(*e*) Institutional provision for the confinement of abnormal cases, patients with unsuitable home conditions, and also for those who desire such arrangements.
(*f*) Further medical examination six weeks after the confinement.

But whereas local sanitary authorities have abundant powers to set up such schemes, they have few statutory duties, and the Board has never been in a position to compel them to fulfil their public responsibilities. In its observations on the recommendations of the Committee the Board expresses a measure of agreement in principle with many of them. It approves the preliminary examination of the pupil-midwife, the holding of a clinical examination as part of her test, and the requirement of post-examination experience before final certification is approved. It favours training in large institutions and lectures delivered by highly qualified persons to large classes; it has always encouraged post-certificate training, and agrees that when a midwife resumes practice after having retired for a while she should undergo additional training. But the Board does not agree that the rules governing the practice and conduct of the midwife should cease to be statutory, for in that case the midwife could plead ignorance of them and the High Court on appeal would have to consider whether her act or omission was in fact professional misconduct, guilt depending on whether any harm had actually occurred from her neglect. This would, it is believed, be resented by representative midwives, who would hate to become a merely disciplinary tribunal.

But while so much is freely admitted and so much is discussed with reasoned arguments, the Central Midwives Board objects in the strongest possible manner to the transfer to the Ministry of Health of its power of approval of training institutions and teachers. Inspection of training, it holds, is better done by those actually engaged in obstetric practice, and inspection of lecturers and teachers by those whose experience as teachers and examiners has been wide and varied. Supervision and inspection of training schools for midwives is no more within the natural

[1] See THE LANCET, Sept. 28th, pp. 669 and 680 et seq.
[2] Central Midwives Board. Memorandum on the Report of the Departmental Committee on the Training and Employment of Midwives. London: Spottiswoode, Ballantyne and Co. 6*d*. Observations of the Board on the Recommendations of the Committee. Same publisher. 6*d*.

scope of the Ministry of Health than is the supervision and inspection of the medical schools of the country. Control of the teaching should obviously, as is the case with medical education, be entirely in the hands of a thoroughly representative body of experts and not of a Government department. The Board draws attention to the fact that a whole-time inspectorate cannot possibly have such intimate knowledge of actual practice or teaching as must be possessed by those who undertake such highly responsible duties. In the past qualified members of the Board have made an inspection of training institutions wherever special circumstances have made it appear that close inspection was necessary, and the Board never approves training at any institution (other than those large hospitals and lying-in institutions which are so governed that the Board can rely on the governors making adequate training arrangements) without obtaining a statement from the local supervising authority that the appointment of the person who will be responsible for the training is desirable. The knowledge of what goes on in training institutions which is obtained from evidence given at the hearing of penal cases and from information obtained as the result of conducting examinations could hardly be obtained in any other way. The Central Midwives Board doubts very much whether the appointment of an advisory committee as is suggested would achieve the desired result; in view of the criticism that has followed previous creations of such committees by the Ministry of Health surprise is expressed at the recommendation.

TUBERCLE IN HOT COUNTRIES.

IN the civilised countries of the temperate zone we look on tuberculosis as one of the most deadly diseases, and attempts to prevent it are widely encouraged. In hot countries, on the other hand, where it is imagined that tubercle is less prevalent, the prevention of this infection is not taken very seriously. Acute and fatal epidemics are apt to claim all the attention; yet Dr. E. Roesle, of Berlin,[1] finds it all too easy to prove that in tropical and semi-tropical lands the menace of tubercle is just as great, or even greater, than in Europe, though it comes less to notice.

He begins his long and detailed survey in South America, where reliable statistics are available only for the large cities. The figures represent the number of deaths per 10,000 living, and to provide a background Roesle gives the tubercle death-rates for 1921–25 as 13·1 in Germany and 10·8 in England and Wales. In 1926 death-rates from tubercle of all organs in South American towns were: Lima 62·6, Callao 58·5, Valparaiso 58·6, Buenos Aires 18·7, Montevideo (lungs only) 25·1, Rio de Janeiro 25·3. Registration started in Rio in 1859, and in 1860, with a population of 155,000, the general mortality was 700 and the death-rate from tubercle 122. The lists, maps, and charts Roesle has collected concerning South America form a monument of patient toil. As regards India, he quotes a Bengal report to show the mortality from tuberculosis was probably 30, though not so registered. He feels that health commissioners are so anxious about the more acutely fatal epidemics they have no time to see that complete registration of tubercle deaths are made. Even so, tubercle death-rates of 24·4 for Calcutta and 27·0 for Madras are recorded for 1926. Tuberculosis admissions to hospital in the British Army in India in 1925 were 9 per 10,000 (lungs only), and in the native army 31, suggesting a much more serious incidence in the populations from which they come. Similarly, in the Dutch Indies in 1923, admissions in the European Army were 35, and in the native troops 54. He concludes that tubercle is very prevalent among the natives of India, and not decreasing. The true number of deaths will never be known, because many persons who are weakened by tubercle die of the epidemics of the year. Despite its long history of civilisation China cannot answer even simple questions about its population, but the tubercle-rate in Hong-Kong in 1923 was 33. In Shanghai in 1925–27 the rate was stated at 12·4, but 65 per cent. of Chinese prisoners at Shanghai showed signs of tubercle in 1923 or earlier, and Roesle concludes that tubercle is widespread in China. In Japan in 1921–25 the tubercle mortality was reported as 20·5. No recent figures of admissions in the forces are given, but in 1908 the rate was 39·2 in the Japanese Army and 60·3 in the Japanese Navy, whereas in the Prussian Army it was only 14. In the city of Manila the tubercle death-rate was stated as 44·4 in 1913–15 and 56·1 in 1923–27. Here and elsewhere Roesle finds evidence that war and its hardships act selectively against those who are tuberculous, raising their death-rate.

Since nothing is said about Africa by this careful investigator, we may add that in 1911 O. Peiper,[2] an army surgeon with the German native troops in Tanganyika, drew attention to the occurrence of tubercle among natives at the coast, infected by tuberculous Goanese and Indian immigrants, for whose exclusion he begged. He returned to the subject next year,[3] gleaning from official reports that in 1907–08 a native chief had described tuberculosis as a new disease from which people were dying. The natives had no particular name for the syndrome, suggesting that it was of recent origin, and the number of cases from year to year was increasing. In the annual reports of Tanganyika Territory, small-pox, plague, cerebro-spinal fever, sleeping sickness, venereal diseases, and influenza attracted so much attention at first that tubercle does not seem to have been mentioned until 1926 when a medical officer was sent to Moshi (4000 feet above the sea) where cases were found. In 1928 621 cases were noted in this area, and "excellent work" is reported from a sanatorium, but the number of deaths is not given.

The long array of figures collected by Roesle is emphatic evidence of the wide extension of tuberculosis in the hot countries of the world.

[1] Archiv f. Schiffs- u. Tropen-Hygiene, 1929, Suppl. II.

POLLUTION OF RIVERS.

SIXTY years ago the owner of a mill on the Calder used the water of the river as ink when writing to complain to the authorities of its pollution, and though there has been some improvement since then, the whole matter is regarded with too little seriousness to receive proper attention. The difficulties of maintaining a sufficient supply of pure water are great enough to make the loss of any sources by pollution a grave matter, as was shown by the recent drought. Every year fresh industries arise in rural districts, and some streams, previously pure, have been polluted during recent years. Such pollution has two sources —(1) insufficiently treated sewage effluents, (2) trade effluents of various kinds. Mr. J. B. Firth, D.Sc., speaking at the Public Works, Roads and Transport Congress, held last week in London, said that pollution by sewage of the River Trent was a serious factor, especially in the neighbourhood of small towns and in rural districts. The supervision of disposal of sewage rests with some overburdened official such as the district medical officer, or surveyor; the sewage works are often hopelessly inadequate for the quantities of sewage to be treated, and the work is entrusted to some unskilled labourer without scientific supervision. The results are such as might be expected: either the quantity of sewage is so great that the excess is surreptitiously discharged into the river by night, in the crude state, or the measures taken for its purification are inadequate and carelessly carried out. In a relatively large number of cases the sewage works consist of one or two settling tanks and nothing else. As the purification of domestic sewage is not a difficult process, the carelessness of the authorities

[2] Ibid., 1911, Suppl. II., p. 5.
[3] Ibid., 1912, p. 431.

is not an easy matter to excuse. Even in the larger towns the works are often either obsolete or of insufficient capacity; few produce a satisfactory effluent.

The Rivers Pollution Act of 1876 and the Salmon and Fresh Water Fisheries Act of 1923 are either ineffectual or insufficiently applied. The difficulty, of course, is that the treatment of sewage and the prevention of pollution are the responsibilities of the local authorities, and these are frequently in too weak a financial position to carry out the reforms required. In the case of trade effluents the problem is not so straightforward; many manufacturers regard the river as a legitimate outlet for waste products, especially if they made use of it with impunity before the 1923 Act was passed. Others, while prepared to take steps for the purification of the effluent, have been at no pains to discover the most suitable method, and either make use of some inappropriate means, or are content with half measures. Occasionally the manufacturer is ignorant of the damage resulting from his waste products, more especially if these are in the nature of food material, such as beet-sugar or condensed milk. An instance in which this occurred was responsible for considerable damage to fish life; the milk products in the process of decomposition gave rise to various highly toxic substances while at the same time they robbed the water of dissolved oxygen. In a case occurring last July, a farm on the River Gipping became unsaleable, and certain of the stock died as a result of pollution of the stream by an acetate silk factory. The situation becomes intolerable if, in order to encourage industry, such an important essential as unpolluted waterways is to be sacrificed. There is no necessity for this objectionable state of affairs; nearly all trade effluents can be rendered harmless, and most of the rest can be substantially improved by chemical means. It is difficult, however, to enforce these measures when manufacturers are aware of the defective treatment of sewage. It will be remembered that at the summer meeting of the British Medical Association Dr. H. McLean Wilson, chief inspector to the West Riding River Board, advocated the formation of more river boards as the best method of attacking the problem. These can supervise the rivers and their tributaries, paying particular attention to sources of possible pollution. The cost of such boards is comparatively small; that of the West Riding amounted only to a rate of one-seventh of a penny. Whether such organisations would be sufficient to control the nuisance is not quite certain. They could undoubtedly do much by way of detection of pollution and advice on its elimination.

The problem of catchment areas for large towns, and the guarantee of water-supply for new town-planning schemes enlarge the scope of inquiry. Joint committees for town-planning can do much in conjunction with the water authorities to prevent pollution of rivers and underground sources of water which may supply more distant areas. The protection of catchment areas, as in the case of that of Manchester, can be enforced by suitable regulations. Various minor points all play a part in the question of maintaining unpolluted streams. In some cases effluents do harm by being introduced into a relatively stagnant part of the river—that is to say, in the shallows close to the bank. It is essential that an effluent should be introduced where the flow is rapid in order that it may be diluted as quickly as possible. This result can be obtained even more satisfactorily by mixing the effluent with river water prior to its introduction into the stream. Again, it is preferable to provide for the cooling and aeration of effluents before discharging them, more especially if the stream is small and the effluent of considerable volume. Hot non-aerated condenser water can be responsible for serious damage to fish life in a small stream.

To sum up, pollution of streams cannot be excused on the grounds of insufficient investigation of origin or ineptness of corrective measures. The work of those who have interested themselves in the problem all goes to show the entirely unnecessary nature of the evil. "The chief hindrances," said Dr. Firth, "are legislative and administrative." The annual report of the Ministry of Health for 1928–29, though making no proposals for amending the law, admitted that the growth of population and the improved standard of sanitation call for capital expenditure in the treatment of sewage which sanitary authorities may be unable to meet. Clearly the matter cannot be effectively controlled while it rests in the hands of small local authorities.

POST-VACCINAL ENCEPHALITIS.

RECENT figures published in Holland concerning the epidemic of "alastrim" in that country show that 15 deaths occurred among 573 cases. In relation with this outbreak, and between July 28th and Sept. 29th of this year, 8239 primary and 146,787 revaccinations were performed. Among these there were 59 cases of post-vaccinal encephalitis with 15 deaths between the beginning of August and Oct. 5th. Eight children believed to be suffering from this affection were treated by one, two or three intravenous injections of 10 c.cm. each of the serum of adults who had recently been vaccinated. Seven of these patients made a complete recovery. The treatment recalls the successful case published by Sir Thomas Horder in THE LANCET (1929, i., 1301), in which a child received 5 c.cm. of the serum of his mother who was vaccinated at the same time as he was. In this case the serum was given intrathecally, a route which theoretically holds out more hope of success. Netter,[1] in a commentary on the present epidemic of alastrim, is inclined to attribute the post-vaccinal encephalitis to the action of vaccinia alone. He does not, however, bring forward any fresh explanation of the very irregular distribution of the cases in different countries and parts of the same country when the same or very similar vaccine has been used, nor does he show any reason for distinguishing these cases from those following other diseases, such as measles and chicken-pox. He also returns to the hypothesis that passage of vaccine lymph through the rabbit in the process of lymph production is the origin of the cerebral complications, though there is evidence that post-vaccinal encephalitis may occur following the use of lymph which has never passed through the rabbit. A new feature in the Dutch report by Kuenen, Kniper, and von Loghem[2] is the occurrence of 14 cases of post-vaccinal encephalitis following revaccination, an event which was almost unknown previously.[3] Netter urges in support of the essentially vaccinal nature of the disease the experiments by Bijl and Fraenkel, 1929, which suggest that vaccine virus becomes more active after contact in vitro with normal brain tissue, and instances the curative effect of the serum of vaccinated persons. The former experiments do not seem sufficiently cogent to have much importance, but the latter might be significant if they were corroborated by further trial. Generalisation of neurovaccine virus in the rabbit and its propagation with production of lesions in viscera have been described by several workers, especially Douglas, Smith, and Price,[4] and Ledingham and Barratt in our issue of Sept. 7th. The experiments by C. Armstrong and R. D. Lillie[5] who produced pneumonia in rabbits by instilling vaccine lymph into the nares or trachea, provide further evidence of localisation in unwonted organs. In these rabbits the virus increased locally in the lungs, which it presumably reached directly, whereas in post-vaccinal encephalitis in man it has only been recovered from the brain with great difficulty, and is not more constantly present there than in other organs. There is no evidence so far of the production of specific lesions in the central nervous system of rabbits even after the intravenous injection of the most active strains of vaccine.

[1] Bull de l'Acad. de Méd., 1929, cii., 225.
[2] Ned. Tijd. v. Genesk., Oct. 19th, 1929.
[3] See Rep. Vaccination Committee Report, 1928.
[4] Jour. Path. and Bact., 1929, xxxii., 99.
[5] U.S. Public Health Reports, November, 1929, p. 2635.

THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE report for the year ending July 21st, 1929, presented to the Court of Governors on Nov. 27th, is the first report to be issued from the new building which was opened by the Prince of Wales on July 18th. Naturally it records a year of great activity. A division of public health has been inaugurated under the directorship of Prof. W. W. Jameson. It has been staffed on special lines, and its members represent various aspects of public health life and activity. A scheme of study in public health, framed on novel lines, has been drawn up. It is hoped that the scheme will succeed in coördinating the different branches of study into a combined and logical exposition of the whole subject of the public health. A new course has also been drawn up for tropical medicine and hygiene. One feature of the new arrangement in this subject is that the summer course ends before the beginning of July—a "stale" month, and one much occupied with congresses and meetings. The division of epidemiology and vital statistics has moved into the School from the National Institute of Medical Research. The study of experimental epidemics is being continued in conjunction with the division of bacteriology and immunology. An interesting feature of the School's work is the informal instruction given for short periods to medical officers proceeding abroad and the liaison work with other nations. Dr. Andrew Robertson has left the department of protozoology to work with the United Fruit Company of New York, in Tela, Spanish Honduras, and the School has been visited by teachers of tropical medicine from Berlin. Hamburg and Shanghai. A system of library services has been organised to supply information on any branch of the School's work to members of the staff and outside inquirers. The library has been expanding very rapidly, as has also the museum, which contains many interesting exhibits supplied by commercial firms. Research work, as always, plays an important part in the year's activities, and investigators have contributed from all over the world. The appendix gives a list of about a hundred original papers published during the year. One group of research is financed mainly from the Milner Research Fund, and another through the Ministry of Agriculture. Meanwhile the teaching work has continued with success. During the year, 166 students attended courses; they came from the Colonial and Indian Medical Services, the Royal Army Medical Corps, other Government services and missions, and they went to every part of the world, the majority to Africa and India.

The full programme of activities is not yet in operation, and the Governors look forward to an early expansion of the department of biochemistry, the section of applied physiology and the work of the School in relation to industrial hygiene.

COMING OF AGE OF THE TRELOAR HOSPITAL.

Sir William Treloar personally received the first patients at Alton on Sept. 7th, 1908, and the annual report for 1928–29 is therefore the "coming-of-age" report of this institution. It records 21 years of successful work, and declares proudly that few institutions can claim to have done so much for national health and efficiency in so short a time. The success is ascribed to the spirit of personal service inspired by the founder, a spirit which has earned for Alton the name of "The Happy Hospital," and secured a record of 95 per cent. success in treatment. Sir Henry Gauvain, in his medical report, traces the development of the work and the gradual changes in method and technique. Particular attention was first paid to the treatment of abscess and the prevention of sinuses, and next to appliances for the prevention and correction of deformity. Research of all kinds has always been a prominent feature of the work at Alton and has produced results, both positive and negative, which have been of great practical importance. On the whole, conservative treatment is regarded as the treatment of choice, and with it are included such adjuvants as heliotherapy and balneotherapy. The seaside branch at Hayling Island was inaugurated in 1912 to make full use of natural sunlight and natural bathing, and the artificial light department supplements the deficiencies of the climate. Intermittent light treatment has been found more beneficial than continuous exposure, so that the South of England may be held to offer better conditions than districts with continuous sunshine. The more exhausted and toxæmic a child is, the less is the indication for exposure to light, and much harm may follow the irradiation of unsuitable cases. Artificial light at Alton is chiefly used for lupus vulgaris. Where surgical interference is necessary it is supplied by the orthopædic department, which works in conjunction with the Portsmouth public health authorities.

Education has always been an outstanding element of the work at Alton. All children from the age of 2 receive daily instruction, and in intelligence and resourcefulness the sick often outstrip the healthy. Year by year discharged patients return to their schools none the worse educationally for their long absence. Special handiwork classes are a great boon to the dull children, and advanced handicrafts are taught to convalescents who will be too old for school when discharged. An early investigation showed that patients with healed tuberculosis could safely resume normal activities, and the boys at the College are not treated as invalids in any way. The cricket and football teams play on equal terms with village clubs, and secure a very fair average of wins. The College trains crippled lads to earn their own living, and succeeds in 80 per cent. of cases. The boys are taught leather work, bootmaking, and tailoring. Senior boys take a course of bookkeeping, and are prepared for open examinations. The combination of vocational and educational training is of great value, and the report claims that a selfish boy does not exist in Treloar College. It was at Alton, moreover, that it was proved that suitable heliotherapy can evoke an increase of nearly ten per cent. in mental activity.

It is gratifying to learn that financial support has been well maintained. The cost per bed per week is £2 1*s.* 7*d.*, and a good deal of rebuilding has become essential, as the buildings conveyed to the institution in 1908 were the old wooden structures of the Princess Louise Military Hospital. For this purpose a rebuilding fund has been opened and a special appeal issued. During the 21 years, to the end of last March, 4871 patients were admitted and 4523 discharged. The average length of stay was 405·2 days, and the total mortality 2·9 per cent. The Alton Hospital has a record of which it may well be proud, and we congratulate it on the attainment of its majority, and trust that it will go on in its maturity from strength to strength.

THE DENTISTS AND THE HAIRDRESSER.

Is the scaling of teeth an operation which amounts to the practice of dentistry, and which therefore cannot be lawfully performed except by a registered dentist? This question was put last week to the stipendiary magistrate at Bow-street, and seemingly was answered in the affirmative. Where an offence is not very grave, magistrates have a wholly praiseworthy habit of refusing to convict, even though satisfied that the prosecution has made out its case; they make the defendant pay something by way of costs rather than by way of penalty. The only disadvantage of this course is that it sometimes prevents the public from getting an authoritative ruling on a nice point of law. The facts in the Bow-street case were clear. A hairdresser in Lamb's Conduit-street had hung up in his saloon a notice saying "Teeth cleaned and scaled." Customers who came in to have their hair cut were invited afterwards

to have their teeth scaled for half-a-crown. A summons was issued at the instance of the Dental Board. On receiving it the hairdresser wrote to the Board that he did no more than clean his customers' teeth with a match-stick and peroxide; this he regarded as beauty culture rather than dentistry. At the police-court he reiterated the contention that he merely cleaned teeth for the purpose of improving the appearance. He kept, he said, no dental instruments on the premises; if a customer had bad teeth requiring attention, he always referred him to a dentist; he was quite unaware that he was doing wrong, and he had now removed the notice from the wall of his saloon. Counsel prosecuting on behalf of the Dental Board had no difficulty in producing a definition of dentistry. Section 14 of the Dentists' Act of 1921 says explicitly that, for the purposes of that Act, the practice of dentistry shall be deemed to include the performance of any such operation and the giving of any such treatment, advice or attendance as is usually performed or given by dentists. Mr. A. T. Pitts, who was called by counsel to give evidence as to the process of scaling teeth, explained that tartar on the teeth was an injurious substance containing a number of germs which might set up pyorrhœa; the removal by scaling was a difficult matter requiring special instruments skilfully handled. This evidence, unrebutted, was presumably conclusive of the fact that the scaling of teeth is an operation usually performed by dentists. The magistrate said he thought the defendant had held himself out as being prepared to practise dentistry, but he dismissed the summons on payment of three guineas costs. It may be noted that the maximum penalty under the Act is a fine of £100. No doubt the magistrate was justified in taking a lenient view. At the same time, the Dental Board has no alternative but to bring such cases before the courts. If teeth-scaling by unqualified persons is to be sandwiched in between a shave and a hair-cut, it may soon become arguable that it is not exclusively a practice of dentistry. The mischiefs at which the Dentists' Act of 1921 was aimed will revive if amateurs are to be allowed to attack tartared teeth, and to decide whether or not the mouth is bad enough to justify reference to a dentist. If Parliament had —as nobody doubts it had—good reasons or conferring on the registered dentist a monopoly of practice which it refuses to the registered medical practitioner, the Dental Board would be false to its trust if it failed in vigilance.

DR. SAMUEL RIDEAL.

Dr. Samuel Rideal, whose death has been announced as occurring recently in South Africa, is well known by name to all chemists and many members of the medical profession as the inventor of the Rideal-Walker coefficient, a convenient method for the ascertainment of the comparative antiseptic power of disinfectant preparations. Dr. Rideal, who was a D.Sc. of London University and a Fellow of University College, was at the beginning of his public career lecturer on chemistry at St. George's Hospital; but he later devoted himself mainly to the study of disinfection problems and those of food preservation, to water purification, and to the chemistry of sewage. On all these subjects he wrote carefully and because of his familiarity with the difficulties of their study, and also because for a time he served as public analyst at Chelsea, he became president of the Society of Public Analysts as well as on different occasions examiner in chemistry at the English Conjoint Board. The Rideal-Walker method, immediately upon the publication of its technique, became commonly employed where it was necessary to compare the germicidal power of any preparation with that of some other disinfectant under carefully standardised conditions. Later, a method of accomplishing the same purpose was designed by the late S. A. Vasey, then chemist to THE LANCET, and this method has been much employed even while it became obvious in certain directions that it was open to criticism. A summary of the position was written in our columns by Rideal, and those who are interested in what at the time was a very live controversy will find the story set out by Rideal in a perfectly impartial way [1] in our pages. Dr. Eric Rideal, Humphrey Owen Jones lecturer in physical chemistry at Cambridge, is a son of the late Dr. Samuel Rideal.

THE ROYAL DENTAL HOSPITAL.

FOR very many years it has been the custom of the Royal Dental Hospital to hold an At Home on the same day as the annual dinner for old students and their friends. On this occasion clinical demonstrations are given by members of the staff, while a large number of interesting cases of rare conditions are collected. This year on Nov. 23rd over 300 former students and their friends attended the hospital. In the morning Mr. S. F. S. Steadman demonstrated the technique of regional anæsthesia; Mr. Bowdler Henry the preparation of the mouth for artificial dentures; and Mr. F. Talbot, the dental surgeon in charge of the newly established electro-therapeutic department, showed some patients under treatment. In the department where children with cleft palates are trained to speak, under the direction of Miss van Thal, several patients chatted to the visitors, and their clear enunciation testified to the value of the teaching. In the afternoon clinical cases were shown, also exhibitions of work in the various departments carried out by the students. Among the cases shown were several of dental and dentigerous cysts, including two examples of a very rare form of the last-named tumour—namely, a cyst arising in connexion with supernumerary teeth. Two cases of diffuse hypertrophy of the maxilla were shown. One patient who attracted some attention was a man of 40, with several unerupted teeth; two sisters of this patient showed a similar condition, and, in addition, defective ossification of the clavicles. The association of cranio-cleido-dysostosis with unerupted teeth as a familial disease has been noted in the literature, but cases are very rare. The orthodontic department was represented by a large number of children showing the results of treatment. The comparison of the original models of the jaws with the present condition of the patients showed how remarkable is the æsthetic improvement which can be obtained, and the boon which treatment can confer on children with unsightly irregular teeth. In the prosthetic department were a number of patients for whom unusual forms of dentures had been made. Obturators designed for cleft palate or to restore the maxilla after extensive operation for malignant disease were shown. The advances in substances available for dentures were illustrated by dentures made of new translucent materials, which reproduce the appearance of the gum in a way not possible with vulcanite. In the radiological department a large number of beautiful radiograms were displayed, and in the pathological department microscopic slides, specimens, and cultures. The John Hampton Hale research department was open to inspection, and visitors manifested especial interest in the investigations by Dr. E. W. Fish into dental caries and the nutrition of enamel and dentine. Many of the past students who visited the hospital in the afternoon reassembled at the Trocadero Restaurant at 7 P.M. to dine together and to greet their guests. Mr. W. J. May, who presided at the dinner, proposed the toast of the past and present students of the hospital and school, commenting on the wealth of clinical material available in the out-patient departments, which hitherto had constituted the whole of the hospital's clinical activities. From January next, however, ten beds would be reserved for Royal Dental Hospital cases at the new annexe of Charing Cross Hospital. Dentistry was not a soft job, but a hard and exacting profession, which nevertheless brought great rewards to its

[1] THE LANCET, 1913, ii., 826.

followers. Mr. E. D. Davis, in response, spoke of the determination shown by the authorities governing the hospital to keep up to date. They were fully conscious that dental surgery in modern times was not confined to the teeth, and that all diseases which had origin in the mouth should be considered in relation to it. The provision of beds and the use of an operation theatre at Charing Cross Hospital would help to show dental students how closely their activities were connected with those of the medical profession. Mr. F. F. V. Mansfield spoke of the revival of the Students' Society, and of the loyalty to the hospital, and the keen desire of the students to be well equipped for their future work. In two directions greater facilities were desirable; some of the students left the hospital without ever having extracted a deciduous tooth, and others had had little or no experience in giving gas. Mr. H. Stobie, the dean, spoke of the academic successes achieved. The examination results taken all round showed 70 per cent. of passes. A department of electro-therapeutics had recently been installed, and research work was in progress in all departments. Full advantage was taken of the facilities provided for post-graduate work. The Dean regretted the resignation from the staff of the honorary anæsthetists, Dr. Harvey Hilliard, Dr. C. J. Loosely, and Dr. E. H. Drinkwater, and announced that Dr. Lionel Smith, Dr. R. G. Karn, and Dr. F. P. de Caux had been appointed to succeed them. After a pleasant interlude of light music, supplied by Dr. Karn, the speeches were resumed. Mr. S. A. Riddett proposed the visitors in graceful terms, and Mr. W. Malcolm Scott, in reply, expressed concern at the diminished number of entries into the dental profession, in view of the possibility that dental benefit under the approved societies would become statutory. Mr. A. T. Pitts, in proposing the health of the chairman, recalled his own student days when Mr. May was a popular member of the honorary staff, always accessible and helpful to the students. Visitors to both the functions organised by the hospital on Nov. 23rd must inevitably have carried away the impression that this dental school is alive to its responsibilities, not only to students but to the general public, and is fulfilling them with zeal and success.

POST-OPERATIVE TETANUS.

IT has long been recognised that the germination and development of spores of *B. tetani* which have gained access to the tissues depends on adjuvant factors. The mechanism whereby the defence of the tissues is maintained when the bacillus is injected in small quantities and appears to be ruptured in the presence of other organisms, certain chemical compounds, an accumulation of blood, or particles of foreign material embedded in the wound, is not clearly understood. Recent observations made in the department of bacteriology of the University of Edinburgh [1] show that the effect even of massive doses varies in different animals and in individuals of the same species. This experimental study was the corollary of a prior investigation into a series of cases of post-operative tetanus attributed to contaminated catgut. Catgut with spores embedded in it was introduced into various tissues and tetanus occurred with great regularity, but only provided a sufficient quantity of the material—i.e., the inoculum—was implanted. In the presence of a small inoculum a variety of agents are capable of predisposing to a tetanic infection, but the majority act somewhat irregularly. The influence of other infecting organisms in promoting the development of *B. tetani* was clearly illustrated. *B. welchii* exerted an adjuvant influence with great regularity, and a strain of *B. coli*, injected in large doses along with *B. tetani* spores in sublethal doses, evoked tetanus, though when smaller doses of *B. coli* were used results were negative. The peculiar relationship of post-operative tetanus to abdominal and gynæcological operations may be due to the fact that intestinal organisms favouring the development of the tetanus bacilli have gained access to the operation area. The authors discuss the nature of the inhibitory and adjuvant influences concerned in tetanus infection and suggest that these are complex. They seem to depend not only on phagocytosis and the oxygen tension of the tissues, but also on factors intimately related to the parasitic properties of the organism and the humoral and cellular defences of the body. The irregularity with which tetanus appears in animals subjected to experimental infection is well in accord with clinical experience. A batch of catgut afterwards proved to be infected has been used for a large number of operations with only a very small resulting incidence of tetanus. Experiments with iodised catgut demonstrated the efficiency of aqueous iodine in the sterilisation of this form of ligature for surgical use. Since, largely owing to the work of Prof. Mackie, sterilised surgical catgut can now be added to the substances in the Schedule of the Therapeutic Substances Act, 1925, this small but tragic group of post-operative fatalities should in the future be prevented.

[1] Certain Factors that Promote the Development of the Tetanus Bacillus in the Tissues, with Special Reference to Post-operative Tetanus—an Experimental Inquiry. By T. J. Mackie, M.D., D.P.H., D. G. S. McLachlan, M.B., and E. J. M. Anderson, B.Sc. A Report to the Department of Health for Scotland. Edinburgh: H.M. Stationery Office. 1929. Pp. 31. 2s.

WE have to announce that Lieut.-General Sir Arthur Sloggett, who was Director-General A.M.S. on the western front from 1914 to 1918, died on Nov. 27th in his seventy-third year.

WE have also to record the death of Sir John Cockburn at the age of 79 on Nov. 26th. He was a medical graduate of the University of London and practised medicine before taking up the political career which led to his becoming Premier of South Australia and afterwards Agent-General in this country.

IN a report of the annual meeting of the Royal Faculty of Physicians and Surgeons of Glasgow allusion was made to Mr. Freeland Fergus as late instead of past president of the Faculty. We regret the slip, and are happy to say that the suggestion was entirely without foundation.

THE annual meeting of the British Institute of Radiology, incorporated with the Rontgen Society, will be opened by Mr. Arthur Greenwood, Minister of Health, at 2.30 P.M. on Wednesday, Dec. 4th, at the Central Hall, Westminster. The Mackenzie Davidson lecture will be given at 3.15 P.M. on the same day by Prof. Gösta Forssell, whose subject will be the Radiotherapy of Malignant Tumours in Sweden. At 6 P.M. on Dec. 5th Prof. A. S. Eddington, F.R.S., will give the Silvanus Thompson lecture on X Rays in the Stars. Further particulars of the meeting will be found in our medical diary. The annual dinner will take place at 7.30 for 7.45 P.M., on Friday, Dec. 6th, at the Trocadero Restaurant, Piccadilly-circus, London. Mr. C. Thurstan Holland, F.R.C.S., the President, will take the chair, and application for tickets should be made to Major D. B. McGrigor, 32, Welbeck-street, London, W.1.

DERBY CITY HOSPITAL.—This poor-law hospital, which, when completed, will have 350 beds in 11 wards, has been opened by the Mayor of Derby, Alderman J. H. H. Grant. It is claimed that the building is the last word in hospital equipment, and that the X ray plant is "superior to that in any London hospital." By the movement of a lever the beds can be transformed into wheeled stretchers; 4000 pieces of crockery an hour can be washed and sterilised; and the medical officer is connected by telephone with every part of the building.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LIV.

INTERPRETATION OF RADIOGRAMS OF THE ALIMENTARY TRACT.

PART I.*—GENERAL TECHNIQUE: THE ŒSOPHAGUS.

IN the radiological investigation of the alimentary tract there are certain fundamental difficulties to the uninitiated:—

1. X ray pictures are the result of the obstruction to the passage of the rays. They represent the shadows cast by all the substances through which the rays pass irrespective of their distance from the surface or from the X ray tube. There is no perspective.

2. The opaque food outlines cavities only in so far as they are filled—the actual wall of the cavity is not represented by any distinguishable shadow.

3. The whole of the alimentary tract is a living muscle. To understand it we must forget the cut-and-dried anatomical descriptions which give us the impression of an inert organisation of tubes which pass the food from the mouth to the anus. A living conception, especially as regards the stomach and duodenum, is fundamental. The possible variations within the limits of the normal are sometimes surprising, even to those with long experience.

Success or failure in diagnosis depends so largely on technique that one cannot eliminate it, even in a short article. It is not just the exposure of one or two films after an opaque meal—to imagine that a reasonably accurate diagnosis can be arrived at by such methods is as futile a conception as suggesting that one photograph can represent an ataxic gait. To arrive at accurate diagnostic results involves a tedious and well-thought-out examination which consists of: 1. Preparation of the patient. 2. Taking a brief history from the patient himself. 3. A series of fluorescent screen examinations, before and after the opaque food has been given, in which manipulation and palpation are freely employed. As many radiographs as may be necessary are taken of the appearances noted on the screen for record and demonstration purposes. 4. Summing up the evidence—that is, detailed examination of all the films, weighing up the notes of the screen examinations and also the clinical notes that have been taken. 5. Issuing the report.

Preparation.

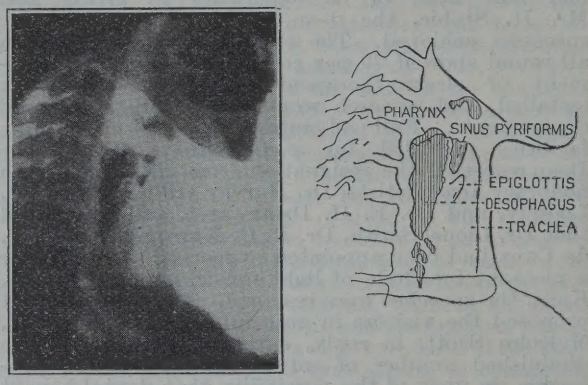
A purgative, two days before the examination and possibly an enema the day before, are necessary precautions against delay in the passage of the opaque food from mechanical causes. If the purgative is still acting when we examine the patient, it will give an impression of hurry that is as artificial as would be the delay of the opaque food by the stagnation in the cæcum or elsewhere in costive patients if no preliminary clearing had been carried out. In order that the stomach may be empty, no food is allowed for some hours before the examination. Apart from these precautions, the patient should live his usual life, for we wish to examine the alimentary tract under the least abnormal conditions we can arrange. During the period of examination purgatives should be avoided and the patient should conform as nearly as possible to his usual routine of life. When the examination is complete it is very advisable to ensure the voiding of the opaque food before it sets into a hard mass, as is liable to happen if no action of the bowels takes place for a day or so.

* Articles in this series on the other parts of the Alimentary Tract will appear in subsequent issues of THE LANCET.

Technique.

The actual technique employed will differ according to local conditions—it must be so arranged that by a minimum of observations practically the whole alimentary tract will be observed. If the examination, therefore, starts early in the morning, the single opaque meal can be followed straight through till the evening; but if the first observations are made at, say, 2 o'clock, only a few hours are available and recourse is had to a system of double feeding. In these circumstances the first meal is watched from time to time for a couple of hours till all information as to the œsophagus, stomach, duodenum, and proximal small intestine is obtained. The patient comes for further observation on the following day, having had another opaque meal five hours before his appointment, preferably a real food mixed with opaque salt in order that, if there is a residue in the stomach, it will be a test under comparatively normal conditions. This method has decided advantages, both from the point of view of the convenience of the observer, and also because it gives greater opportunities for confirmations of observations, which are of the first importance.

FIG. 1.



Paralysis of the upper third of the œsophagus. The food sticks in the lower pharynx, particularly in the sinus pyriformis on either side of the larynx in the laryngeal pharynx and in the upper œsophagus. Forcible swallowing acts with difficulty and incompletely passes the food on.

Clinical History.

By taking the clinical history three main objects are obtained:—

(*a*) The radiologist can obtain personal knowledge of the history; frequently his experience indicates leading questions which bring out suggestive data, entailing variations in routine without which diagnosis would not be possible. As a simple example, a note that only certain types of food produce a sensation of œsophageal obstruction at once suggests that the opaque food employed should as nearly as possible correspond to the food that gives rise to the trouble.

(*b*) It gives the opportunity of getting to know something of the patient's mentality.

(*c*) An opaque meal cannot but be an ordeal to some patients, and a chat beforehand gives the radiologist the chance of allaying quite natural nervousness.

Screen Examination.

Presuming that the observer's eyes have been thoroughly prepared, either by the use of special goggles or by a period of waiting in the dark, the screen examination proceeds with the observation of the passage of the opaque food through the œsophagus and the rest of the alimentary tract, a number of observations being necessary at intervals determined by the rate at which the food passes and by other factors. This, however, is far from the whole story, for in addition to the use of his eyes the observer can manipulate the abdominal organs and judge from the movements of the shadows such things as undue fixation, laxity, or the cause of displacements. Even more important is the combination of the sense of touch with that of sight, from which combination

he may obtain invaluable evidence as to the presence, site, and perhaps also the nature of any resistance that is detected, the reason for incomplete filling of any portion of the gut, the exact site of pain on deep pressure. It is essentially the work of a trained medical radiologist.

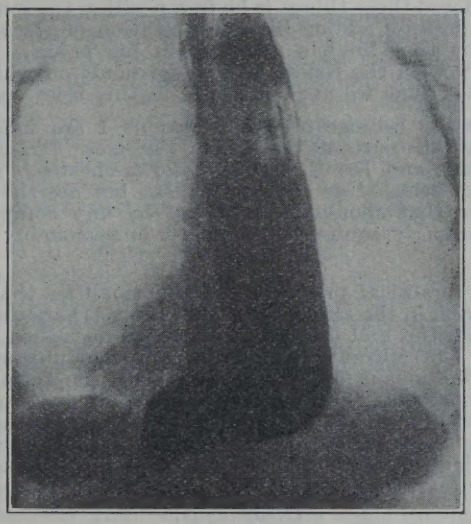
A thorough screen examination is a very complicated and intense method of investigation. It requires absolutely undivided attention, for the observer may be put on the track of the cause of the symptoms by one transient observation which, of course, he must always attempt to confirm. In these observations it is essential for his own safety that he must be speedy, otherwise he is unduly exposed to radiations which will ultimately lead to disastrous results. In using his hands for palpation, whether bare or clothed in X ray proof gloves (which not only interfere with his sense of touch but also give him a false sense of security), he must never allow them to be in the direct beam of the rays. This can only be accomplished by using a very adaptable apparatus with which the illuminated area can be rapidly and easily cut down to a small focus and moved about over the organs that are under investigation, his palpating hand being always outside the illuminated area.[1] It is a complicated and delicate method of investigation that is as valuable as it is difficult, and it requires long experience to obtain the best results.

During the course of the screen examination X ray films are exposed as a record of what is seen on the screen. These are complementary to and cannot replace the screen examination. They record as far as possible such things as the radiologist notes on the screen. In this combined screening and filming technique it is seldom that the radiographs give the clue to the diagnosis—they merely confirm and record what has been noted on the screen. It very frequently happens, however, that the radiologist sees things on the screen which he is unable to record on the films—e.g., a duodenal cap which is irritable and can only be maintained normally filled for a brief period, a period that is quite sufficient to convince him that it is normal, even though his films show an apparent deformity, due to the partial filling of the cavity.

The technique of radiography should be absolutely standardised so that the radiologist need have no doubt as to the quality of the films he will have to examine when he makes his report—the exposing of the films is just an incident for record purposes in the course of his screen examination. He may, however, need a series of films to confirm the persistence or otherwise of certain conditions—e.g., that peristaltic waves miss out a certain section of the stomach, probably indicating an early growth, or that the deformity of the duodenal cap is persistently the same in character. Such serial radiograms need not be taken in very rapid succession, in fact they are of more value if they are made at intervals of a few seconds, since the average rate of peristalsis in the stomach is about three a minute.

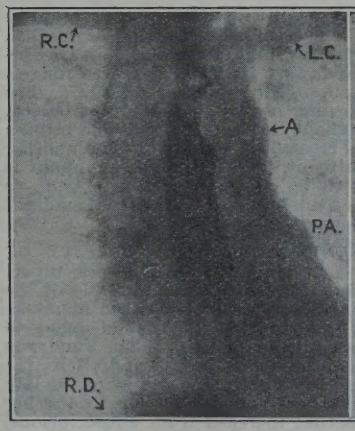
[1] See the Dangerous Art of Palpation, British Journal of Radiology, (B.I.R. Sect.), October, 1926, xxxi., 385.

FIG. 2.



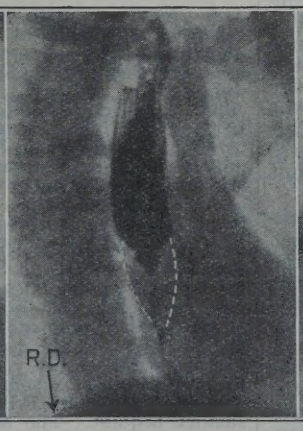
Old-standing case of cardiospasm in which the œsophagus has become much dilated and tolerant to holding large quantities. The act of vomiting—comparable to and very like the gush of pyloric obstruction—only partially empties the cavity. Note the thin tail of the little opaque food (indicated by a dart) that is passing the cardiac orifice. Also note that the increase in width of the œsophagus is accompanied by increase in length, so that the last few inches lie nearly flat on the diaphragm, forming an angle around which it is practically impossible for a bougie to find its way. Blind bougies should therefore never be used under any circumstances.

FIG. 3.



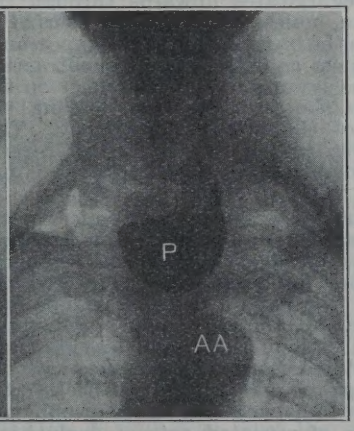
Œsophageal obstruction. The funnel-shaped lower end of the shadow suggests spasm—i.e., that the lesion is one affecting the mucous membrane. The film is taken in the semi-lateral position, but the patient is not sufficiently rotated to show whether the mediastinum is clear or not.

FIG. 4.



Œsophageal obstruction due to growth. Note the tortuous course but no displacement and a suggestion that the channel is in the middle of the growth. It is probably a growth in the wall of the œsophagus and its outline can just be detected on the film. It is indicated on the tracing by the dotted outline.

FIG. 5.



Typical œsophageal pouch. Note the rounded outline of the lower part of the shadow and the absence of any outlet.

R.C. = right clavicle; L.C. = left clavicle; A. = aorta; P.A. = pulmonary artery; R.D. = right diaphragm; P. = œsophageal pouch; AA. = aortic arch.

Interpretation of Observations.

It is most unwise, even in an apparently straightforward case, to attempt to arrive at a diagnosis without mature consideration. The radiologist should first carefully go through the notes that he has made of his screen examinations, examine all the films in detail, and then write out a précis of his observations

which will form the first part of his report. This entails time and concentration. Not until he has done this should he attempt to draw conclusions and complete his report on the case. Having made up his mind as to the interpretation of the observations he has recorded in his précis, he should return to his original clinical history and see how his conclusions fall in with the clinical picture. Only when he has duly considered these things is he in a position to complete his report by adding his interpretation of the observations that he has recorded in his précis. It is mainly with the report and the grounds on which it is based that we are concerned in this brief outline.

For the radiographic illustrations I am indebted to my late partners Dr. R. S. Paterson, Dr. E. W. Twining, and Dr. E. D. Gray of Manchester. These are not selected as show specimens but are the type of film that should be produced by any competent and properly equipped radiologist in reasonably easy cases.

For practical purposes the abnormalities that are met with in the alimentary tract are: (1) anatomical peculiarities and displacements; (2) disturbed function; (3) ulceration and the results of ulceration; (4) adhesions; (5) new growths; (6) the formation of diverticula. Various other lesions are occasionally met with, but they are comparatively so rare that we may almost neglect them—nor is it possible here to consider the displacements due to causes outside the alimentary tract.

Œsophagus.

When the patient is screened during the act of swallowing, the food is seen to pass over the back of the tongue straight down through the pharynx and into the œsophagus. Naturally, fluids and thin foods pass much more rapidly than thick. With fluids the process looks like the action of gravity, and the time taken to reach the cardiac orifice is not more than one or two seconds, whereas with thick pasty food, such as we use for œsophageal examinations, it takes perhaps 10 or 15 seconds. No indication of peristalsis is seen in the upper third and it is only when there is obstruction that we can definitely note peristaltic activity in the lower two-thirds. Normally the food bolus that is swallowed passes in an elongated mass at a more or less even pace all the way down, perhaps pausing momentarily at the cardiac orifice. When there is an obstructive lesion, particularly low down, we see the peristaltic wave pass down the column of opaque food as a ring of contraction and, as this approaches the obstruction, the opaque food regurgitates upwards through the wave of contraction, unless the pressure exerted is sufficient to canalise the obstruction. The appearance on the screen is almost as if the wave of contraction was passing from below upwards, as its effect on the shadow food is to shoot it upwards, leaving the immediate region of the obstruction empty. This appearance has given rise to descriptions of reverse peristalsis, which condition, so far as I know, is not actually to be seen in the œsophagus.

In the œsophagus there are no anatomical peculiarities, but displacements due to aneurysms, enlarged glands, and various chest conditions are common. Function is sometimes impaired owing to interference with nerve-supply. Normally a bolus of opaque food should pass down at an almost regular speed, fluids passing more rapidly than solids, and leaving practically no traces. When there is interference with the nerve-supply, the opaque matter tends to stick to the walls of the laryngeal pharynx and upper œsophagus. It is usually a case of repeated acts of deglutition, often accomplished with difficulty, before the food is passed down, perhaps with the help of a draught of water. Such an appearance indicates *interference with the nerve-supply* (Fig. 1).

The not uncommon condition known as *cardiospasm* (achalasia of the cardia) (Fig. 2) is also probably an example of disturbed function. There is marked obstruction at or just above the cardiac orifice that ultimately leads to enormous dilatation of the œsophagus. The character of the food seems to make little or no difference and, in extreme cases, one can fill the œsophagus up to the level of the clavicle with large quantities of food. A portion of this is usually vomited, the rest may pass on in time whenever the orifice relaxes. Twenty-four hour residue is, however, not very uncommon.

Simple ulceration of the œsophagus is rare, and gives rise to obstruction by reason of induced spasm from the irritation of certain foodstuffs. It is therefore important to make up an opaque food that is likely to set up the spasm or, as a routine stand-by, to give a mouthful of dry toasted crumbs before the opaque food is swallowed. The patient will always tell the observer when the spasm has been induced and he can then give the opaque food and note the position and nature of the obstruction (Fig. 3). Malignant ulceration may also be investigated by this bread-crumb method, and the obstruction due to the spasm may be noted long before there is organic narrowing of the passage. Naturally it is not possible to distinguish malignant from simple, specific, tuberculous, traumatic, or other ulcerations, except on purely clinical grounds, but the observer will take films and will also screen extremely carefully, in the upright semi-lateral position, to see whether or not there is abnormal shadowing around, and particularly below the site of the obstruction. Intrinsic growths with ulceration of the œsophagus seldom give any detectable shadow; those that extend to the œsophagus from the mediastinum are usually quite well seen on the screen. These *extrinsic growths*, however, are seldom associated with spasm, and the resulting X ray picture is one that suggests a narrowed, displaced, or tortuous passage of the opaque food through the obstruction (Fig. 4). It is a rather different type of picture from that of ulcerative obstruction, where spasm plays a large part and the lower end of the food shadow ends abruptly in a funnel-shaped tail.

The *œsophageal pouch* (Fig. 5) originates at the junction of the pharynx and œsophagus. As it gradually enlarges it sags down from this position, and the lower end of the shadow comes to a considerably lower level. The lower outline of a pouch is always rounded, with no suggestion of an outlet at the lower end. They are seldom detected before they are the size of a walnut. Diverticula also occur lower in the œsophagus, but they are very rare.

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Lecturer in Radiology, University of Cambridge.

A NEW CLINIC AT BIRKENHEAD.—Sir George Newman, chief medical officer of the Ministry of Health, on Nov. 20th, in opening a new clinic for children in Birkenhead, said that children to-day are healthier, better, stronger, weigh more, and are taller than children of 1907. The clinic represented the opening of the golden age of health. In the 1520 clinics throughout the country almost a million children received medical treatment last year, while another million had dental treatment. The Birkenhead clinic is the first in the country to be equipped with a cinema to educate mothers. It has a nursery and an artificial sunlight room, a sand pit, and a lawn.

ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND.—Our Dublin correspondent writes:—The report for 1928–29 of this Society furnishes a sad example of the need that exists among near relatives of deceased members of the medical profession, as well as of the inadequacy of the Fund to meet the demands made on it. The Fund was fortunate during the year in obtaining a windfall in the form of a bequest of some £3500 from the widow of the late Mr. W. J. Hepburn, F.R.C.S. Edin., in addition to another smaller bequest. The actual increase from subscriptions, however, was a little less than £700, while the direct disbursement of grants came to £1644. The number of grants made was 83, and the average amount was £22 6*s.* 6*d.* How inadequate this is may be judged from the fact that in one case, in which a grant of £30 was made, the recipient's means from other sources were nil, while in some other cases the recipient was, apart from the grant from the Fund, dependent on the old age pension. The Fund is administered with great care and economy and deserves a more widespread support than it receives.

Special Articles.

GENERAL MEDICAL COUNCIL.

PRESIDENT'S ADDRESS.

AT the winter session of the General Medical Council, which opened on Nov. 26th, the President, Sir Donald MacAlister, recalled the fact that it was 40 years since he was admitted to membership of the Council, and 25 years since he was first entrusted with the responsibilities of the President's chair. "The time is drawing near," he said, "when I must resign into your hands the trust you have so long and so loyally reposed in me; but if you are good enough to consider that prolonged experience may in some measure compensate for lack of youthful vigour and initiative, I am willing for a little longer to continue my endeavours in your service."

A Retrospect.

"Forty years' retrospect," said Sir Donald, "satisfies me that, amid divers changes of operation and vicissitudes of public appreciation, there has been a steady advance, both internally in the Council's practical efficiency, and externally in its general estimation by the Government, the Judicature, the public, and the profession of medicine at home and abroad. The Council has not failed to respond to the progressive demands of the changing years, and, by those qualified to criticise and to judge, its efforts have been approved and encouraged. In the light of my long and intimate knowledge of its working I cannot but pronounce the Council to be to-day a better instrument for fulfilling in the public interest the duties laid upon it by the Medical Acts than it was 40 years ago. It is more harmonious, more zealous, better informed, and more happily inspired now than then."

Changes in Membership.

The President went on to record changes in the personnel of the Council. "Death has," he said, "taken from us Sir Thomas Jenner Verrall, a direct representative of English practitioners since 1912, an eager and fluent contributor to our discussions, of ripe experience in professional affairs, and zealous for the honour and welfare of the profession. Prof. Arthur Thomson has retired from the representation of the University of Oxford, after faithfully serving his university on the Council for nearly a quarter of a century. He carries with him our esteem for his sturdy independence of character, and our respect for his keenly critical intellect and his wide scientific knowledge. Mr. William Guy has completed his term of office as an additional member for dental business, originally appointed by the Privy Council in 1921. To his energy and his familiarity with dental education and policy the Dental Board owes much of its success in establishing itself as a new organ of professional government. Though Sir Edward Farquhar Buzzard has retired from his seat as representative of the Royal College of Physicians of London, we happily do not lose the benefit of his counsels. For the University of Oxford has done us the grace to appoint him its member here, and we heartily welcome him back. The Royal College has appointed in his room Dr. Henry Letheby Tidy, of St. Thomas's Hospital, and honorary secretary of the Royal Society of Medicine, whose repute as a physician and a scientific investigator has preceded him, and from whose enlightened coöperation we promise ourselves much profit in every way. As additional members the Privy Council has appointed two members of the Dental Board, Mr. John William Alexander McGowan, of Glasgow, and Mr. Edward Leo Sheridan, of Dublin, elected by the qualified dentists of Scotland and of Ireland respectively. With Mr. Dolamore for England we have now for the first time a dental member for each of the three countries. This readjustment removes from the Council one English additional member, Mr. William Robert Ackland, appointed last year; but he will still continue to serve his profession on the Dental Board, as he has been re-elected by the qualified dentists practising in England and Wales.

"The recent election of direct representatives to the Council has resulted in the unopposed return of Sir Norman Walker by the medical practitioners of Scotland, and of Dr. Leonard Kidd by those of Ireland, north and south. In the English constituency Dr. Brackenbury is assured of a fresh term of office dating from Jan. 1st, 1930; and Sir Jenner Verrall's place is filled by the election of Mr. Nathaniel Bishop Harman, who has approved himself highly competent in matters of professional administration."

Indian Medical Degrees.

The President then referred to the position of Indian medical degrees, and their recognition by the Council, as furnishing guarantees for efficient practice in this country, under the provisions of the Medical Act, 1886, Section 13. "In previous addresses, and in the minutes of the Executive Committee, you will," he said, "find particulars of the inherent difficulties of this question, and of the patient efforts we have made since 1922 to overcome them. I pointed out to you last May that the period for which recognition of Indian medical degrees for registration here was provisionally granted, pending the appointment of a Government Commissioner of Medical Qualifications and Standards, was fast running out. I stated that the evidence of separate inspectors, appointed ad hoc by the Government of India, had been received; but that their reports lacked reference to any common standard comparable with our own, and moreover disclosed individual deficiencies in regard to Indian methods of training and testing which could no longer be overlooked. I expressed the Executive Committee's earnest hope that the Government of India would not delay further its assumption of the responsibility, which rests upon it by law, to maintain such standards of medical qualification as would be acceptable for purposes of recognition outside of India. I endeavoured to make it clear, once again, that the Council is not concerned with the standards deemed sufficient for practice in the several Indian provinces. It is concerned solely with the standard which it is required by law to guarantee as in fact sufficient for efficient practice in Great Britain and Ireland. Qualifications admitted to the British Register must reach that standard.

"On behalf of the Council, on June 12th, 1929, I addressed a letter to the Secretary of State for India setting forth in detail the grounds for these conclusions, and pointing out the essential services both to India and to the Council, which fell to be rendered, in the absence of an All-India Medical Council, by a full-time Commissioner appointed by the Indian Government. His reports, authoritative, fully informed, and impartial, transmitted through the Indian Government, would be received by the Council with full confidence as a basis of action, and would furnish it with the guarantees that are indispensable for the due fulfilment of our statutory duties in respect of recognition. This letter was followed by communications from the India Office, stating that, as a temporary measure, the appointment of a whole-time Commissioner of Medical Qualifications and Standards had been agreed to by the Central and the Provincial Governments, pending the settlement of the permanent machinery required to enable the General Medical Council to discharge its obligations.

"These intimations were laid before the Executive Committee on July 22nd, when they agreed that, pending the confirmation of the appointment of the Commissioner, the recognition of Indian Medical degrees, which would otherwise cease on July 31st, would be continued until the meeting of the Committee in February, 1930. In August we were asked whether we agreed with the Secretary of State in thinking it desirable to offer the appointment to Colonel Needham. The reply was to the effect that, from our experience of the value of Colonel Needham's unique qualifications, we deemed the proposed appointment in every way desirable. In September we learned that Colonel

Needham had accepted the appointment, had made arrangements to leave for India on Nov. 1st, and was prepared to make his inquiries and report to the Executive Committee in time for its meeting in February. On Oct. 15th the India Office informed the Council that owing to action taken in the Legislative Assembly on Sept. 25th, the Government of India and the Secretary of State had felt obliged to cancel the appointment already intimated, and that Colonel Needham's departure for India was countermanded. The India Office further stated that the Legislative Assembly will meet again in January, and it was proposed to ask it to reverse its decision, and to explain to it, "not only the unfortunate results on the prospects of Indian students that would follow from a definite refusal to appoint a Commissioner of Medical Standards and Qualifications, but also the genuine desire of the General Medical Council to help India consistently with the obligations which British statutes impose on them."

"These perplexed and perplexing communications," said Sir Donald, "came before the Executive Committee yesterday, and I was instructed to inform the India Office that the final decision thereon must be postponed until the Committee's meeting in February next. But the inevitable absence of authoritative reports on the actual standards of study and examination for Indian medical qualifications would be of the most serious import. The Committee would in fact be deprived, by action taken in India, of the necessary guarantees of sufficiency, on the basis of which alone it would be in a position to extend recognition of Indian medical degrees beyond the period now current."

Qualifying Examinations.

"The Executive Committee, charged by the Council with making arrangements for the cycle of inspections of qualifying examinations to begin in 1930, have carefully considered the appointment of inspectors in medicine, surgery, and midwifery respectively. They have agreed to invite certain eminent and experienced members of the profession to undertake the important duty of inspection, and hope shortly to make definite appointments which will meet with the approbation of the Council. Visitations and inquiries have continued, at the instance of the Education and of the Examination Committee, in reference to the courses of study, and to examination requirements, bearing on important subjects of the professional curriculum. The visitations of recognised examinations for registrable diplomas in public health, sanitary science, and State medicine have been actively proceeding, and are indeed nearly completed."

The Pharmacopœia.

"This Committee," said the President, "will report on steps taken, and to be taken, with reference to the adhesion of this country to the proposed international agreement on the pharmacopœial unification of potent drugs, following on the International Conference held at Brussels in 1928. At this conference the Council was represented by the late Sir Nestor Tirard. The Committee will also transmit to the Council a report of progress made by the Pharmacopœia Commission since our last session. It will be found that the Commission has been diligently and fruitfully engaged in preparing for the issue of the British Pharmacopœia due in 1930, and has opened up communications with the British Dominions and with the United States which are likely to extend its usefulness."

At the conclusion of his address a vote of thanks to the President was proposed by Prof. J. B. Leathes, and seconded by Sir Norman Walker. The Council then passed to the consideration of penal cases.

HOSPITAL SAVING ASSOCIATION.—The annual report shows that the contributions during the past year amounted to £320,714, as compared with £248,878 in the preceding 12 months. There are now 6711 groups and 651,713 members, and during the year 172,457 contributors and dependents were treated at voluntary hospitals on the list of the association.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ANNUAL MEETING OF FELLOWS AND MEMBERS.

THE annual meeting of Fellows and Members of the College was held on Nov. 21st, with Lord MOYNIHAN in the chair.

The PRESIDENT referred to points of special interest in the annual report of the Council, such as the examination for primary Fellowship held in Canada for the first time this year; the establishment of a research scholarship; and the formation of a British College of Obstetricians and Gynæcologists. With reference to certain provisions in its Charter which appeared to conflict with the powers and functions of the Royal Colleges no satisfactory compromise had, he said, yet been reached.

Dr. E. W. D. KITE asked whether it was true that in the examination for the Fellowship the examiners decided beforehand the proportion of candidates to be passed, and that once the number determined had been reached the remaining candidates inevitably failed.—Dr. F. W. COLLINGWOOD suggested that the Fellowship examination was no true test of operative skill, and that it should be revised in such a manner that this could be gauged.

The PRESIDENT said that it was not true that the proportion of successful candidates was decided before the examination. Every candidate was passed who reached the required standard; the proportion of successful candidates was small because the standard was high. Dr. Collingwood's criticism he considered was just; but unfortunately it was not possible to assess operative ability by means of an examination; it was possible only to judge whether the candidate had had a reasonable opportunity of acquiring it.

The report was then adopted.

Mr. SOMERVILLE HASTINGS then moved:—

"That this forty-first annual meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation upon the Council of the College, in view of the fact that there were 18,587 Members as against 1945 Fellows."

He apologised for repeating an appeal which had now been made annually for over 40 years. In refusing to admit Members to the Council the Fellows were exercising a legal right, according to the Charter of the College. But that legal right had been obtained originally in an unjust manner, and he was calling upon the Council to right a previous wrong. If the Charter was examined, he said, it would be seen that in 1800 the Royal College of Surgeons of London was founded by Royal Charter, and the governing body of that day was elected by the Members. In 1843 the name was changed to the Royal College of Surgeons of England, and at the same time the degree of Fellowship arose. It was decided that the first Fellows should elect a Council, and needless to say they elected themselves, retaining the power to elect others without examination. The Members had suffered under a sense of injustice ever since. It was not, he said, that the Members were dissatisfied with the College; on the contrary, they wished to contribute to it. Most of the Members were general practitioners, a body of men essential to the coördination of medical services. The Council at present was in danger of becoming archaic; the Fellows did not encounter the general run of patients and were in danger of losing touch with the times. The examinations of the College, he thought, stood in need of revision. Was all the physiology included in the primary Fellowship of value to the surgeon? He appealed to the members of the Council not to harden their hearts against a reform which would be to their advantage.

Dr. H. S. STRATFORD, in seconding the motion, said that the arguments in favour of admitting

Members to the Council were both historical and practical. THE LANCET in 1845 had described the Charter, which "deprived members of the right to sit on Council," as "mischievous and iniquitous." He reasserted that Members wished to be represented on the Council not for their own profit but that of the State and community at large. During the war Members of the College had done an enormous amount of work, and the mortality among them had been relatively much higher than among the Fellows. The franchise had been accorded to women on account of their war-work. Members of the College needed a representative to voice their views and difficulties on the Council. The examination for the Fellowship was, he considered, not practical enough. Students should be signed up by their teachers for simple emergency operations such as tracheotomy, amputation, appendicectomy, before qualifying In obstetrics practically all normal cases nowadays were attended by midwives; students were only trained to treat abnormal cases, and saw few that were normal. He was glad to see that a College of Obstetrics and Gynæcology was being formed.

Dr. REDMOND ROCHE said that the Council in 1907 had sent a circular letter to all Fellows and Members stating that although the Council had decided to admit women to the College, they were anxious to obtain the opinions of Fellows and Members. Now, in the report for 1929, the Council declared that, in view of the postal vote of the Fellows, it was not prepared to give Members direct representation. On the previous occasion the Council had made a decision and was ready to carry it out. Now the only reason given for refusing Members representation was the vote of the Fellows.

Dr. C. W. BROOKE opposed the motion. Members, he said, who really desired this reform should approach a Member of Parliament with a view to revision of the Charter. In the meantime, if the Royal College of Surgeons was an antique, it was at least a priceless antique, and should be preserved intact. He suggested that the President should rule this resolution out of order at future meetings.

Dr. ARTHUR HAYDON suggested that six Members should be elected to the Council and created honorary Fellows. If representation of Members on the Council was to remain impossible he was prepared to contemplate the formation of a new College.

In putting the motion the PRESIDENT said that, historically, the facts of Mr. Somerville Hastings were inaccurate; Members had never been in a position to elect the governing body; the original body had been self-elected. The large bulk of the Fellows were in general practice, so that the Council was in fact elected by general practitioners. Judging by the small numbers of Members who attended this annual meeting, the desire for representation in Council by Members was not widespread. Changes in the form of examinations had to be made gradually in order to be fair to the candidates. If there were any earnest desire among the Members for a change in the Charter, it could no doubt be altered legally, but until the Council was assured of that desire both Fellows and Members must continue to act under its clauses.

The motion was then put and carried, and the President announced his intention of submitting it to the Council.

BUCKSTON BROWNE ANNUAL DINNER OF FELLOWS AND MEMBERS.

The dinner held at the Royal College of Surgeons on Nov. 14th was the second of a series of functions to be held at the College, and due to Mr. Buckston Browne's generous gift of £5000, the interest of which is expended in providing an annual opportunity for friendly intercourse between Fellows and Members. In accordance with the terms of the trust, half of the company present at the dinner were Members of the College. Lord Moynihan presided, and the following is a list of those present, among whom it will be seen are several laymen whose personal connexion with the function was explained by Lord Moynihan in a few words.

Mr. W. R. Ackland, Dr. C. M. Anderson, Dr. H. T. Ashby.

Mr. Louis Baron, Mr. C. J. Bond, Mr. Victor Bonney, Mr. G. Buckston Browne, Mr. A. H. Burgess, Mr. R. H. Burne.

Mr. J. E. G. Calverley, Mr. H. W. Carson, Mr Eustace Carter, Mr. T. Carwardine, Mr. D. K. Cassels, Dr. F. William Cock, Mr. Sydney Cockerell, Mr. Arthur Cooke, Mr. S Forrest Cowell, Mr. S. C. Cresswell, Mr. V. A. Crinks.

Mr. Bernard Darwin, Dr. W. L. M. Day, Dr. John Dixon.

Mr. W. McAdam Eccles, Dr. H. Muir Evans, Dr. J. W. H. Eyre.

Mr. C. H. Fagge, Mr. J. Herbert Fisher.

Mr. H. Courtney Gage, Mr. Leonard Gamgee, Mr. A. J. Gardham, Dr. A. D. Gardner, Mr. G. E. Gask, Dr. Lewis G. Glover, Dr. R. N. Goodman, Sir Charles Gordon-Watson, Mr. Albert Green, Mr. C. H. Greenwood, Sir Wilfred Grenfell, Mr. Ernest W. Hey Groves.

Dr. George Hall, Mr. Sampson Handley, Prof. H. A. Harris, Mr. Ravensworth Hart, Rt. Hon. Arthur Henderson, Mr. R. G. Hogarth, Dr. G. H. R. Holden, Sir Thomas Horder, Dr. N. G. Horner, Mr. C. H. Howkins, Dr. William Hunter.

Mr. Leonard Isaac.

Dr. Thoresby Jones.

Mr. R. E. Kelly, Mr. Geoffrey Keynes.

Viscount Lee of Fareham, Mr. W. R. Le Fanu, Mr. E. K. Le Fleming, Mr. Hugh Lett, Mr. V. Warren Low, Sir John Lynn-Thomas.

Mr. C. E. A. MacLeod, Mr. W. Ernest Miles, Dr. J. L. Morton, Lord Moynihan.

Dr. F. E. Nichol.

Mr. Carlton Oldfield.

Mr. Herbert J. Paterson, Dr. C. J. Penny, Sir D'Arcy Power.

Mr. H. J. Relph, Dr. W. S. Richardson, Mr. Frank Romer, Dr. Thomas Rose, Mr. R. P. Rowlands.

Sir Percy Sargent, Mr. Graham Simpson, Colonel T. Sinclair, Prof. G. Elliot Smith, Dr. Alfred R. Spencer, Sir Squire Sprigge, Mr. F. J. Steward, Dr. C. A. Stidston, Mr. W. T. Storrs.

Dr. Edward S. Tait, Mr. Herbert Tilley, Mr. F. B. Treves, Mr. Thomas Turner.

Mr. Cecil P. G. Wakeley, Dr. F. J. Waldo, Sir Cuthbert Wallace, Sir H. J. Waring, Mr. James Watts, Mr. Russell Wilkinson, Mr. F. J. Willans, Mr. Henry Wilson, Mr. William Wyllys.

After the toast of the King, and allusion to the munificence of the donor, Lord Moynihan stated that the rule had already, he was glad to say, been laid down that no other toast would be proposed at this dinner, and that no response would be expected from anyone, but certain present, he thought, should be mentioned by name as having a connexion either with the function or with the College generally. To Mr. Louis Baron, he said, the College owed the foundation of the Bernhard Baron Research Scholarship of £500 per annum for seven years. They were all glad, he said, to welcome Lord Lee of Fareham, Chairman of the National Radium Commission, and Sir Wilfred Grenfell ("Grenfell of Labrador"), who had asked that no mention of the sort should be made of him, but his request was disregarded as the occasions were so few when he was seen at gatherings of his colleagues. Further, the President called attention to the presence of Mr. Arthur Henderson, Minister of Health; Dr. John Dixon, the Senior Member of the College, who obtained his diploma in 1854, and was 98 years of age; and Mr. Bernard Darwin, the well-known exponent of golf on the links and in the *Times*, and grandson of Charles Darwin. Lord Moynihan then requested the company to drink to the health of Mr. Buckston Browne.

After dinner Mr. Buckston Browne showed a film of Down House, Darwin's old home, which, it may be remembered, he presented to the nation at a meeting of the British Association in 1927, in response to an appeal from Sir Arthur Keith. Mr. Buckston Browne acquired the property from a grandson of the great naturalist, and transferred its possession to the British Association with an endowment for its upkeep and preservation, the condition being that the property should be regarded as a gift to the nation and open to visitors without charge. The film pictures included a view of Down House from the south, the lawn, the entrance to the Sand Walk, the study where Darwin worked, and the chair in which he wrote large portions of the "Descent of Man." In the course of demonstrating these pictures Mr. Buckston

Browne expressed the hope that Down House would be a centre of scientific research in connexion with the pursuit of surgery.

The guests on leaving were presented by Mr. Buckston Browne with a coloured reproduction of the portrait of John Hunter, which he had given to the College, and which is ascribed to Gainsborough. This portrait represents the plain, not to say ugly, Great John Hunter whose features Sir Joshua Reynolds idealised in his intellectual presentation.

ROYAL SOCIETY OF MEDICINE.

THE ANNUAL DINNER.

THE annual dinner of this Society took place on Nov. 21st at the May Fair Hotel, Lord Dawson of Penn, the President of the Society, occupying the chair. About 400 Fellows were present, and the guests included the Prime Minister, the Minister of Health, the French Ambassador (M. de Fleuriau), the Presidents of the Royal College of Physicians of London, the Royal College of Surgeons of England, the British College of Obstetricians and Gynæcologists, and the Medical Society of London; the President, Chairman of Council, and Medical Secretary of the British Medical Association; the President of the Medical Women's Federation; the President of the Royal Academy; and the Dean of Westminster. Among others supporting the Chairman were Commander L. C. Bornacchi, Sir James Berry, Sir John Bland-Sutton, Sir Walter Fletcher, Sir Arthur Robinson, Lord Lee of Fareham, Prof. Sidney Russ, Sir Albert Levy, Sir Alfred Lewis, Mr. Hugh Macmillan, and Dr. Kay Menzies.

The King's Health.

The toast list opened auspiciously, for the chairman, in proposing the loyal toast, took occasion to make a welcome pronouncement on the King's health. He said: "Upon this day last year there began that grave illness which nearly cost the King his life and the nation a beloved Sovereign. This is a suitable gathering in which to state that the King, in his recovery, goes from strength to strength."

The Prosperity of the Society.

The toast of the Royal Society of Medicine was proposed by the Prime Minister, who offered a tribute of praise to the medical profession, speaking as a private individual and as a public servant. He would leave to the Minister of Health the task of entering into details which, he believed Mr. Greenwood had discovered, occasionally raised somewhat thorny questions between the profession and himself. It was one of the great demands made upon a Prime Minister's time and intelligence to shift difficulties upon other shoulders, and to take smoother paths than his Ministers were sometimes able to choose. Comparing the modern doctor with the modern politician he found certain resemblances. Both were now less interested in cures than in maintaining the general health of the community. He had noted, also, that the medical profession was becoming much less interested in close and detached examination and consideration of an organ than it was in the harmonious and healthy inter-relation of the organs promoting the general health of the body, and here, again, was a point of contact with the politician. Standing in front of this gathering he felt that he was speaking to those who belonged, in some mysterious sort of way, to a common brotherhood. He had to couple with this toast the name of Lord Dawson, who was an old acquaintance of his. They had first met during Lord Dawson's student days, at a most respectable supper, issuing together towards midnight, both bound for the north of London. Their combined wealth that night was insufficient to save them from walking from the south end of Gower-street to Holloway station. A third party present at that meeting, however skilled in prognosis, would hardly have forecast that it would be their fate not to meet again until 40 years later they were fellow-guests at Buckingham Palace.

Lord Dawson, in response to the toast, claimed the Prime Minister as an apostle of the art of healing, for had he not recently been engaged in trying to allay and heal international strife? More than that, he had had the skill and understanding to try to institute a state of immunity amongst nations against the virus of war. It fell to the President of the Society to give an account of it. It was faring well; its finances were such as would satisfy even the Chancellor of the Exchequer. Beyond the Society's ordinary Budget, there was instituted, a little more than a year ago, a "Royal Society of Medicine Trust," the object of which was to further learning and to help young men who were engaged in research, especially by placing before them such works as would help them to pursue it effectively. An anonymous donor had recently given a donation of £1000 to this fund. Lord Dawson spoke of the advances made during the past year, especially the wider knowledge gained of the applications of radium and the organisation of its availability. The researches which had revolved round radium, vitamins, and hormones had revolutionised thought in the same way that, years ago, bacteriology had revolutionised it. We had got away from the conception of mass and weight, and had moved from matter to influence, from the static to the dynamic. The recent outcome of research into distemper was especially satisfactory, since its credit would fall to this country, where friendship between man and dog was a matter of national pride. The research was a fine exemplification of team-work. With regard to the application of medicine to the services of the country, the Local Government Act had opened up a new chapter in the relations of the medical profession to the Government. It was a satisfaction to medical men to know that the Minister of Health shared the belief that the secret of progress in health services depended on a responsible relationship between the medical profession and the local authorities. In that part of medicine which abutted on administration and on the interpretation of knowledge for the public good, the profession sought close relationship between themselves and the administrative bodies. In the territory which concerned itself with knowledge, education, and research, medicine must remain for ever unfettered.

Possibly the best way of bringing knowledge to the service of the people would be to set up semi-autonomous bodies with members having administrative and specialist knowledge sitting together, which would bring about quickness of decision and flexibility of thought. It would be the most rational form of delegation. The experiment had already been tried in respect of broadcasting, and of electricity; and the best and the latest example of all was the organisation of the nation's supply of radium, which organisation would commend itself to the consideration of all thoughtful people.

The Maintenance of Voluntary Hospitals.

Dr. A. P. Thompson submitted the toast of the guests. He said that statesmen, like physicians, were great borrowers; they had to acquaint themselves with all sorts of advances in human knowledge and ingenuity, in order that they might be brought to fruitful use in the community. On the subject of the voluntary hospitals, he said that to him people who talked glibly and cheerfully about the disappearance of great free institutions like the voluntary hospitals appeared as reckless of the future of this country as they must be ignorant of its history and character. The spirit of disinterested work manifested in voluntary hospitals was one of the treasures of our race, tradition, and inheritance. The sources of weakness of the voluntary hospitals seemed to be two-fold: (1) their lack of coöperation with one another and with established public health services, (2) their poverty. He believed the working man would make sacrifices to preserve the voluntary hospitals. In Birmingham, a coöperative scheme had been established, which, in two years, had resulted in a member-

ship of 360,000, and in the collection of £200,000, all the work having been done by voluntary effort. Great changes affecting the profession of medicine in its relation to the public were everywhere being discussed, and were mostly acknowledged to be inevitable. It would be idle to deny that certain tendencies had given cause for uneasiness, even alarm. It had been said that the day was approaching when the State would control all the medical services in this country, and that the first great step to this end would be taken with the fall of the voluntary hospitals.

Mr. Arthur Greenwood (Minister of Health), in responding, said that the view that the Ministry of Health had no regard for the voluntary hospital system of this country was utterly mistaken. From two points of view, the voluntary hospital system in this country was vital to the progress of public health. First, it was interwoven with the growth of knowledge on problems affecting the lives of our people; secondly, there was need of every hospital bed existing in this country. His only object was to form a great brotherhood of people who would serve the common ends of humanity. In the effort to understand the problems which doctors felt were fundamental in the public interest, he had gathered to himself the heads of the profession, in a spirit of friendship, and the response had been whole-hearted. He was appalled, as he dug deeper and deeper into the problems of public health, by our lack of knowledge, which only the medical profession could remedy. There remained much to be learned, and, when it had been learned, much to be applied. He welcomed, without reservation, the fullest coöperation of the medical profession, and would do all in his power to help that profession in its work. He asked—was entitled to ask—the members of the profession that they in their turn would assist His Majesty's Government, and would believe that the Government was as much concerned with the problems at issue as medical men were themselves, because they had got to face the results of lack of knowledge. He hoped that, as this Government grew from strength to strength, and as it was succeeded by others of similar intensity of purpose, the bond between this great profession and the Government would also grow from strength to strength. He claimed the assistance of the profession that there might issue a magnificent people, people of fine calibre and tremendous spirit, a body of citizens which would lead the world.

Mr. H. P. Macmillan, K.C., expressed his conviction of the great mutual benefit which results from association with members of other professions. Professional men were apt to get into ruts—and a rut, as had been happily said, only differed from a grave in being narrower. Sir Alfred Ewing had once suggested that we all needed "re-potting" at intervals. We got pot-bound in our professional routine, and an occasional transplantation into fresh soil was wonderfully reviving. It was only within the last hundred years that medicine, like law, had finally emerged from the fogs of mediæval mysticism. The earlier London pharmacopœias read like inventories of an alchemist's spells and potions. Even in 1824, neither morphia, iodine, nor quinine was to be found in the official Pharmacopœia. The great strides recently made in the direction of preventive medicine in the department of public health emphasised the fact that in the treatment of mental disorder alone the public was still excluded by an antiquated system from the benefit of preventive treatment. Mr. Macmillan hoped that this restriction would soon be removed. To the need for preserving the voluntary hospitals system, the Minister of Health had referred with a fitting emotion. All would rejoice that the Minister recognised the value of these institutions, and that apprehension of peril to them was not likely to be realised under his guidance.

SOUTHPORT HOMŒOPATHIC HOSPITAL.—This hospital has been purchased for £3500 by the Southport Town Council. It is in future to be used for the treatment of aged and infirm patients.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Critical Condition of the Medical Profession.

Prof. Schlossmann, of Düsseldorf, lately read a paper before the German Society for Social Hygiene on the crisis in our profession. The liberty of the medical man, he said, is a dream of days gone by and the profession cannot longer resist a progressive nationalisation. Apart from some specialists with a large income the majority of doctors earn their livelihood from the fees paid them from institutions under the State Insurance Act. This Act provides them with 250,000,000 marks every year. Moreover, the individual practitioner has to observe so many rules and regulations issued by the government and by insurance authorities that he cannot be described as a free worker. Prof. Schlossmann does not at all agree with the leaders of the profession in their fight against sick clubs and other institutions of State insurance, for he holds that it only embitters their mutual relations. It would be better, he thinks, to coöperate with them so as to get over certain abuses.

According to Prof. Schlossmann, the profession is suffering from an economic crisis, an ethical crisis, and a crisis of confidence. The position of the younger generation who have to wait several years before admission to club practice is desperate financially, but still worse is the fact that they are obliged to be without work at a time when it is most desirable that they should be gaining experience and consolidating what they have learnt. The present method of study does not create medical practitioners; two years are spent in learning chemistry, physics, botany, zoology, physiology, and anatomy, and during this time the medical student does not see a single patient. Furthermore, clinical teaching is much too theoretical. What is worst of all is the public lack of confidence in doctors. The Insurance Act leads the patient to look upon the practitioner as more of a sick club officer than a medical adviser. Medicine has changed from an empirical to a technical science. The individual practitioner is not in a position to know all the technical methods of treatment and still less to provide for himself all the technical apparatus; this is the reason why patients are often sent to dispensaries, hospitals, and clinics,which have modern equipment. The increasing number of unqualified persons and the afflux of patients towards them bear further witness to the critical state of the profession.

Prof. Schlossmann suggests not that social insurance should be limited but rather that it should be extended. The object of sick clubs should be not only to cure their members but also to keep them in good health. If this were done, and if those classes of the population who are still outside national insurance were admitted to its benefits, a great number of the profession would find employment. His address has created a sensation, for he is a man who is well known in his specialty and also as president of the successful exhibition of hygiene held in Düsseldorf in 1926. The *Ärztliche Vereinsblatt*, the official organ of the Vereinsbund, says that his opinion that the representatives of the profession are hostile to State insurance is absolutely erroneous. But the medical profession, it continues, wishes to remain a free profession whose rights and duties as to insurance practice are limited by free agreement, and it is not inclined to become a mere collection of insurance employees.

Treatment of Congenital Dislocation of Hip-joint.

The German Congress of Orthopædics discussed the results of the treatment of congenital dislocation of the hip-joint. Prof. Lange, of Munich, reported the results obtained by the bloodless method of Lorenz which has been generally adopted for 30 years. At Munich and elsewhere, he said, he had

studied the results of 2200 cases in which the reduction was performed between 3 and 25 years ago. Only in 5 per cent. had reduction proved impossible, but the difficulty was to retain the reduced joint in position, especially after the dressing had been removed. Redislocation may take place and sometimes a deforming arthritis or coxa vara may develop in the course of years. In 50 per cent. a full anatomical and functional cure was obtained, but to get this result the children had to remain under care for several years. Functional troubles rarely developed in cases where the deformity was reduced within the first two years, and the moral was that this should be done as early as possible. Dr. Spitzy, of Vienna, described a method of producing an acetabulum in cases where the reduction had been only temporarily effective. He makes the joint accessible without opening it and drives a splint, taken from the tibia, into the region above the head of femur. In this way an impediment to dislocation is provided. He has operated on 15 cases with good results.

Abandonment of a Medical Qualification.

The question whether a medical man may renounce his qualification has lately been decided by the Bavarian High Court. A doctor was being prosecuted for a crime, and, expecting to be sentenced to imprisonment and loss of civil rights, which includes the loss of the qualification, he informed the Government that he wished to renounce his qualification. Nevertheless, after being discharged from prison, he continued to describe himself in his prescriptions and on his door-plate as a qualified medical man, and was therefore prosecuted for wrongfully assuming that title and making the public believe that he was duly qualified. In the trial he pleaded that his letter to the Government had been voluntary, that he had not been deprived of the right to revoke it, and that he thus had the right of describing himself as qualified. The supreme court, however, found him guilty. It held that a medical man has the right to renounce his qualification, but only on condition that he does not intend to use it again. The defendant had been punished for his crime with the loss of civil rights which include the qualification; if he wished to regain it he would have to petition the Government for an act of grace.

Leaf Silver as a Dressing for Wounds.

Dr. Moritsch recommends leaf silver as a covering for fresh injuries, wounds, excoriations, and bruises. This material has been used by Prof. Lexer, of Munich, to cover sutures in plastic and cosmetic operations. Moritsch has noticed that under the silver leaf the wounds become cleaner and the discharge is less than under the usual ointment dressing, also the change of dressing is less painful. Owing to the bactericidal action of leaf silver the sutures may be left longer in the wound, which is of special importance with wounds under a plaster-of-Paris dressing.

Gonococcal Meningitis.

Dr. Lorentz has recently observed in the Berlin Westend Hospital a case of gonococcal meningitis. Such cases are very rare and it has seldom been demonstrable that meningitis occurring during gonorrhœa was due to the infection. In the case under his care the gonorrhœa was complicated by arthritis. The organism cultivated from the cerebro-spinal fluid was shown to be Neisser's gonococcus by microscopical, biological, and serological examination.

An international exhibition of hygiene is to be held in Dresden. It is the purpose of the exhibition to instruct the public in health matters and to give a full picture of what has been done in this direction. Whereas the exhibition of Düsseldorf was universal and included every branch of hygiene, social medicine, and gymnastics, the Dresden exhibition will be limited to personal hygiene. It is expected that the German States and Provinces, and all the bodies concerned in health, will take part, as they did in the last Dresden exhibition in 1911. Foreign countries have shown great interest in the exhibition and several governments have already declared their readiness to contribute.

In the past year 100,000 former combatants have made claims for the first time for damage done to their health by the war. In the past nine years $2\frac{1}{2}$ million certificates have been given under the law for the care of the victims; 900,000 combatants receive pensions; and there are 100 offices for the care of the injured, with 500 full-time medical officers.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Clemenceau.

THE medical profession in Paris claims the great patriot as one of themselves. Georges Eugène Benjamin Clemenceau was born in 1841 at Mouilleron-en-Pareds in the Vendée, was educated at the Lycée of Nantes, and became a docteur-en-médecine. Migrating to the United States in 1865 he returned to Paris in 1870 and practised as a physician in Montmartre before he was elected mayor of the eighteenth arrondissement and a member of the National Assembly.

X Rays and Neighbourliness.

Some time back one of the great Paris dailies foreboded all sorts of troubles for the unhappy people who live in the neighbourhood of X ray installations. It was not the first time that Mr. Coutremoulins, the distinguished physicist, obtained a hearing for some of his ideas in the lay press and in official circles. Mr. Coutremoulins was one of the X ray pioneers in this country, and though he is no physician he is still at the head of the Rontgen service at the Necker. Much sensation was caused by his discovery that a photographic film is affected by the rays from a tube 100 yards away. In his experiments it was, of course, a naked tube. Mr. Coutremoulins draws the deduction that X ray installations are dangerous for the neighbourhood. Most of his medical friends would say: No, not if the tubes are protected. But their evidence is held to be biased because it is in their own interest to minimise the risk. Some years ago the Académie des Sciences of Paris appointed a special committee to study the question, and its answer was that in actual X ray work no danger exists for neighbours. Now a committee has been appointed by the préfet of police, of which Mr. Coutremoulins is a member. It is somewhat remarkable that with the exception of Dr. Zimmern and Dr. Lobligeois no other member of the committee has special knowledge of X rays. So everyone wonders what authority its decisions will have.

The Confédération des Syndicats Médicaux has sent to every member of both Chambers, senators and deputies, a formal letter containing the solemn decision of the medical profession to refuse collaboration if the social insurance law is not modified. Amendment is indeed probable, but when? The law is due to come into force on Feb. 5th. The budget discussion is only just started and will scarcely be finished by the New Year. Then come the holidays, which are sacrosanct, and January will be over.

Prof. Netter, of the Institut Pasteur, has given the Académie de Médecine his views on the ætiology of post-vaccinal encephalitis as a result of his study of a campaign of vaccination at Rotterdam. He lays the responsibility on the preparation of vaccine lymph by passage through the rabbit.

César Roux, professor of surgery in the University of Lausanne, has been awarded the diploma of doctor hon. caus. of the University of Paris. The same distinction has been granted to Dr. Egas Moniz, of Lisbon, the originator of arteriography by injection of sodium iodide, by the University of Lyon.

LONDON CLINIC AND NURSING HOME.

THE ceremony of laying the foundation-stone by the Duchess of Atholl of the London Clinic and Nursing Home, Limited, was held at the Devonshire-place entrance of the building now rapidly rising at the corner of Devonshire-place and the Marylebone-road.[1]

After the ceremony the Chairman and Directors entertained a large number of supporters and friends at luncheon at the Trocadero Restaurant, Piccadilly, when the Duke of Atholl presided.

After luncheon and the loyal toasts, Lord Moynihan, President of the Royal College of Surgeons of England, proposed Prosperity to the Scheme, which he referred to as a necessary development of modern medicine. He pointed out that, while the art of the Middle Ages still left us marvelling, the progress of science, especially in relation to medicine, during the last fifty years at any rate, had developed in an unlimited manner. Lister had ensured, he said, that a large range of cases previously termed medical should pass to the sphere of surgery, while operative surgery meant the institution of nursing homes. The scheme whose prosperity he was advocating he described as the first concerted effort to supply in London a nursing home where not only accommodation but specialised service could be obtained, with the important additions of resident medical officers, adequate nursing, and direct provision for the association of the general practitioner with the cases. Alluding to the financial support from laymen, which had made the scheme possible, he said that, while pecuniary dividends might be absent, dividends in terms of moral worth would be credited to them by the Recording Angel. In wishing heartily for the success of the scheme, he warned its supporters that criticism was ahead of them on the grounds either of their motives or of the practical nature of their plans, but that criticism, he had found, was a proof of success.

Mr. Allan Hepworth, the Managing Director, said: The ceremony we have witnessed to-day marks a further stage in the development of a scheme upon which certain doctors and laymen have been working for some few years, and which, when carried into full effect, should have far-reaching and beneficial results for paying patients, especially those of moderate means. So far as these patients are concerned there is a pressing need for provision more adequate in quantity and quality and more in harmony with present-day demands. We are not overlooking the increasing effort now being made by many of the hospitals for providing pay-beds, but only a limited number of those can occur—that is to say, that certain patients availing themselves of the service of the hospitals and being in a sufficiently satisfactory financial position are expected to pay. But when the hospitals have extended to this class the fullest provision they can, there will still remain a large section of the public demanding such a service, and on such reasonable terms and conditions as our clinic and nursing home will make an effort to furnish. We believe there is a great opening, not only in London, but also in the provinces, for many such clinics and nursing homes as the one we are now establishing, for already our scheme, and the ideals governing its working, have created widespread interest, and in two or three of our largest provincial cities a similar project is under consideration.

The advancement of our scheme has necessarily called forth criticism, favourable and adverse; we welcome both, especially adverse criticism, when it is constructive and well informed. Both on the medical and the business side we have for a long time been convinced, from facts, experience, and requirements, that there is a pressing need for a clinic and nursing home governed by the ideals, and with such service and administration as we are adopting; it is our intention to open out a wide field of valuable service for the benefit of sick people, and if this may mean the breaking down of some of the old fences, we hope to replace these with something better and more in harmony with present-day necessities.

Dr. Moreland McCrea, Chairman of the Medical Group, who also responds to this toast, will explain the position of the doctors identified with the Clinic. As Managing Director I will refer to the financial, administrative, and service side of the nursing home. Whilst the responsibility for the management of the home will rest upon the Directors of the Company, there will always be the closest coöperation with the Medical Group, and between the two there is a complete unity of views. In all our long deliberations goodwill and perfect understanding have prevailed. May I emphasise the point that this nursing home is not a hospital, it will not be administered on the usual hospital lines, and we shall in no way attempt to compete with the hospitals. Our nursing home can perhaps be better described as an hotel for sick people—that is to say, it will be directed more on the lines of hotel than a hospital, or than many existing nursing homes—especially as regards the freedom of the patients and the facilities for visiting by relatives and friends.

With reference to the financial side of the Nursing Home scheme, may I first publicly express appreciation of the services rendered by certain gentlemen in the City of London, who being actuated by a true public spirit, and considering the establishing of this nursing home a matter of great public importance, not only subscribed themselves for a large amount of the capital, but influenced other shareholders to subscribe. Without this valuable help the necessary capital would not have been obtained. It is a great pleasure to be in a position to state that the necessary capital has been found, and that our financial resources enable the Company to complete, furnish, and equip the building while retaining a working capital equal to our requirements. The Clinic and Nursing Home is a public limited company, the shares being held by about 300 shareholders, but the Company has not been brought out as primarily a money-making concern. Those in the City who were responsible for finding a large amount of the capital did not put up their money with the object of making it a remunerative financial operation, but are prepared to sacrifice their own financial interests for the sake of what they consider an important and much-needed public movement. None of them hope or expect to make money out of it. Notwithstanding this fine and magnanimous public spirit, the Directors of the Company recognise that there are two interests to look after: (1) the shareholders as investors in the Company, and (2) the patients. We are convinced we can serve the interests of both when the detailed plans and arrangements, carefully thought out, are put into operation. We expect to give the shareholders a reasonable return on their investment, whilst for the patients there will be a nursing home and a medical service which for efficiency, comfort, satisfaction, and reasonable charges will certainly not be surpassed by any first-class nursing home in London.

With regard to the charges for the various patients' rooms and the service, patients will have an alternative choice as to which they will be asked to pay: (1) a fixed price for the room, plus what are understood to be charges for the usual extras, and our charges for such extras will be based on an exceptionally moderate scale; or (2) an all-inclusive price (*a*) for the room, (*b*) fee for operating theatre, (*c*) dressings, (*d*) drugs, (*e*) special nurses if required.

[1] THE LANCET, 1928, ii., 729.

The patients will thus know, before they enter the Home, the exact cost of their stay per week, with no bill for extras on leaving. It is expected that the nursing home will contain about 200 patients' bedrooms, and each room has received careful consideration in the matters of lighting, heating, ventilation, and equipment. Representatives of the Medical Group, and the Directors of the Company, including the Architect, Mr. Biddulph-Pinchard, have visited numerous clinics, hospitals, and nursing homes in Sweden, Denmark, Holland, France, and also in this country to find the latest and best of everything for the good of the home in general and the patients, nursing and other staff in particular.

In harmony with the statement published in the prospectus issued to the shareholders last April, certain provision will be made for a number of rooms for people of moderate means. The *non-inclusive* charges for the more well-to-do patients will range from about £12 12*s*. or £14 14*s* a week, and up to about 30 and 35 guineas a week, and for this larger amount a patient will be provided with a private suite of rooms, so that if any relative desires to stay, or live in the home for a time with a patient, this can be arranged. Where an *all inclusive* charge per room is desired these prices will, of course, be increased.

The most careful attention is being given, by the Management Board and the Medical Group, to the service in the home. The choice and variety of the food to be provided, and its proper cooking and serving will be entrusted to members of the management whose technical skill, ability, and wide experience justifies full confidence, and as to the proper cooking we have already secured on our executive staff certain ladies of recognised standing in household and domestic science, with a wide range of practical experience in dietetics to meet the needs of any patients who are ordered special diets by their medical advisers. We shall also engage experienced chefs, and in making these appointments we have already been promised the help and advice of certain friends of our nursing home who are in a position to give practical effect to their advice. In fact these friends have promised to procure them for us.

It remains to refer to the appointment of the matron and the selection of nurses. As to the appointment of matron we shall have a wide choice, for already we have received applications from many candidates. With regard to the nursing staff, of a total number well over 120, we think there is need to strike out on new and better lines to secure the best and most experienced nurses for whom there will be a hostel in a suburb within a reasonable distance of the home. In the general running of the hostel we shall aim at making the nurses comfortable and creating such an atmosphere as will make it less of the usual institution and more of a home from home.

In Greater London we have a population of 8 to 10 millions of people constantly swelled from the provinces and by foreign visitors; with the resources to draw upon, which I have mentioned, we think that the service we shall provide will command success.

I thank you, Lord Moynihan, on behalf of the Company and the Medical Group for the toast you have so kindly and gracefully proposed, and to you, my Lords, Ladies, and Gentlemen, for the way you received the toast.

Dr. Moreland McCrea, Chairman of the Medical Group, said: It is a curious fact that while we have in London establishments unsurpassed in the world in efficiency and comfort for the treatment of the sick poor, no such provision has been made for those who are able to pay for treatment, though the latter provide the necessary funds. However creditable it may be to our charitable instincts that we provide in our hospitals, as a free gift, every resource that modern methods can devise for the investigation and treatment of disease, it is scarcely a tribute to our common sense that we exclude all but the objects of benevolence from these very resources. With the advance of medical science there has arisen a demand for an elaborate equipment which can scarcely be provided by individuals, and for a coöperation, never thought of in the older methods of practice, between specialists in different branches. The introduction of such an equipment and coöperation into private practice is everywhere recognised as imperative to practical progress. It is just ten years since some of us met to discuss this difficult problem. The obvious answer was to erect a building fully equipped for the investigation and treatment of disease, on the lines of a modern hospital, with rooms to suit the means of all classes of paying patients, and with adequate laboratories. If to such a building there could be attached a block of consulting-rooms occupied by consultants representing every branch of medicine and surgery we felt that an ideal solution would be obtained. We imagined that we had only to give to a cause so meritorious our blessing for the financiers in the City of London to open their coffers and supply the necessary funds. We were, however, soon disillusioned. No matter how meritorious our scheme the City would not take us on trust, and we found that it was useless to expect their help unless we were prepared to take some financial risk in the undertaking. As this was contrary to all medical ethics in this country our negotiations came to an end.

The fact that we are to-day in a more fortunate position is due to the enlightened enterprise of a distinguished group of business men, who have been able to grasp both the importance of our objects and the difficulty of our professional position. They have generously taken upon their shoulders the whole financial responsibility of the undertaking, only asking us to take the 99 years' lease of the block of 36 consulting-rooms in a building closely adjoining the nursing home. To them we owe the fact that our dreams are about to be realised and that we shall shortly see in actual being the great building of which your Grace has to-day so kindly laid the foundation-stone. The statement I have just made concerning the financial position represents the only monetary transaction undertaken by members of the Medical Group. They have also agreed to supply a committee to work in an honorary and advisory capacity with the Company, in a similar manner to the medical committee of all our large hospitals.

Speaking for the benefit of those who are unable to be present at to-day's ceremony, I may say that the site chosen for the building is situated on the south side of the Marylebone-road, and is bounded on the west by Devonshire-place and on the east by Harley-street. We have been asked why such a site should have been chosen in preference to one further afield, and we have been told that in such a position it will be impossible to eliminate noise. But a site in the chosen neighbourhood was essential, and we are satisfied that the rooms occupied by patients will be quiet and free from disturbance. These rooms will face not on the Marylebone-road, but on the south, south-east, and south-west frontages. The rooms facing on the Marylebone-road will be used for administrative purposes. Between the latter and the former there will be a long corridor 10 feet wide, and in this way the patients' rooms will be entirely protected from the noise of traffic. The goods entrances, including that for milk, will be on the Marylebone-road side. To secure privacy for the admission of patients by ambulance a special entrance has been arranged on the south side. The entrance of the nursing home will be in Devonshire-place.

The building will contain 200 beds. It has been designed with the utmost care, after literally years of study, by an architect who is unique in the attention which he has devoted to this particular problem, in constant consultation with the Medical Group and with the directors of the company. In order to obtain the very latest information on modern hospital practice, a committee of the directors and the members of the medical group has visited the most modern

hospitals in Sweden, Denmark, Holland, and France, and we are convinced that this hospital will set an entirely new standard in design and equipment. A wide range of accommodation between small single rooms and large suites will meet the varying requirements of patients, but in every single instance the standard of comfort will be the highest attainable, and special attention has been paid to small amenities. Two features in the staffing of the hospital will add greatly to the comfort of the patient. The nursing staff will be sufficiently large to enable us to supply special nurses, usually a costly item, at a very low charge, and there will be two resident medical officers who can be called upon at any moment of emergency. In regard to the latter we desire it to be clearly understood that these resident medical officers will in no way usurp the authority of the patient's own medical adviser. It is an essential part of our conception that the patient should still remain in contact with his regular medical adviser, for we consider this of the utmost importance for the continuity of treatment.

The hospital will be open to the patients of any medical man whose name is on the Register of the General Medical Council, but it will be appreciated that the Group must have the first call upon empty beds. Should consultation be required, there will be the perfect freedom of choice which exists elsewhere to-day. The laboratories, X ray department, and dispensary, all of the highest class, will be at the service of all surgeons, physicians, and general practitioners who have patients in the hospital, on an equal footing with the members of the Group. The occupants of the consulting-rooms will see all their patients on the usual basis of individual practice, having the advantage of proximity to the hospital, its X ray equipment, and its laboratories. There is no moral, legal, or verbal agreement in existence or contemplated for any tenant to employ in a consultative capacity any other tenant in the building. There will be absolute freedom of choice in every respect as it exists to-day. A plan is under consideration by which the combined efforts of these tenants can be placed at the disposal of the medical profession for that large class of patients which is just outside the limit for receiving hospital benefits. The Company have agreed to place at our disposal some beds for this purpose at a low figure. It would be possible to arrange a composite fee in order to include all form of examination and treatment for these patients, and in this way all the advantages of combined work could be brought within the reach of a large deserving class of patients.

Such, Your Graces, My Lords, Ladies and Gentlemen, is our policy and our scheme. May your good wishes be fulfilled, and on behalf of the Group I thank you.

"The health of the Duchess of Atholl" was proposed by Sir Lenthal Cheatle, and was drunk with acclamation, after which Mr. B. H. Binder proposed the toast of "The Guests," to which Lord Greenwood replied. The proceedings closed with a toast proposed by Dr. Beddard, wishing prosperity to the Chairman of the scheme.

SECOND INTERNATIONAL MALARIA CONGRESS.

IN 1925 a committee of Italian malariologists including Drs. Marchiafava, Ascoli, Bignami, Bastianelli, Dionisi, and Gosio, initiated and organised a "First International Malaria Congress" which was held at Rome in October of that year under the patronage of the Italian Government. One of the resolutions passed was that there should be a second International Congress in 1930, which would be the fiftieth anniversary of Laveran's discovery of the malaria parasite, and that it should be at Algiers, where the discovery was made. Arrangements for this Congress have now been completed under the authority and patronage of the French Government. It will be held at Algiers from May 19th to 21st, with Prof. Mesnil as president. The following subjects will be discussed: (1) the parasitology of malaria (including therapeutic malaria from the parasitological point of view), (2) anopheles mosquitoes, (3) epidemiology and endemiology, (4) pathology, (5) quinine and other alkaloids and drugs in therapy, and (6) prevention and control. Communications should be in English or French and should be sent so as to arrive at the general secretariat of the Congress (Pasteur Institute, Algiers) before Dec. 31st. They will be printed and distributed to members before the opening of the Congress. Members of the Congress will include, in addition to representatives of Governments and institutions, all medical men, biologists, biochemists, and engineers who desire to participate. Applications for membership of the Congress should be sent before Jan. 15th, 1930, to the secretary-general of the Congress (Dr. L. Parrot, Pasteur Institute, Algiers, Algeria), accompanied by a postal order for 100 French francs. This subscription will entitle the member to take part in all meetings and official receptions of the Congress, to receive a printed copy of the Transactions, and to benefit by the reduction of fares allowed by the French railways and shipping companies. There will be optional excursions on May 22nd, 23rd, and 24th.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. M. Gordon is placed on the Retd. List with rank of Surg. Capt.

Surg. Lt.-Comdrs. F. L. H. MacDowel and A. W. McRorie to be Surg. Comdrs.

The following appointment is notified: Surg.-Lt. T. W. Froggatt to *Devonshire*.

ROYAL ARMY MEDICAL CORPS.

Lt. A. T. H. Marsden is secd. for serv. with the Sudan Def. Force.

ARMY DENTAL CORPS.

Capt. D. H. W. Williamson to be Maj.

Lt. J. J. Seaton to be Capt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. G. J. S. Archer, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

SUPPLEMENTARY RESERVE OF OFFICERS.

G. F. Walker to be Lt.

TERRITORIAL FORCE.

Lt.-Col. F. G. Lescher to be Bt. Col.

Maj. D. S. Martin, R.A.M.C., to be Divl. Adjt. 46th (N. Midland) Div.

Maj. W. C. MacKinnon, R.A.M.C., to be Divl. Adjt. 50th (Northumbrian) Div.

Capt. J. D. Hart to be Maj.

D. M. Dunlop to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capts. A. N. Smith, H. Miller, and H. S. Allen, from Active List (supern. for serv. with O.T.C.), to be Capts.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: D. A. Wilson, F. E. Lipscomb, M. Clancy, C. P. O'Toole, G. H. J. Williams, S. B. S. Smith, V. V. Brown, J. F. McGovern, and W. Heron.

Lt. C. M. Leckie (General List, Army, Dental Surgeon) is granted a temporary commission as a Flying Officer (Dental) on attachment to the R.A.F.

Capt. R. E. Edwards (Army Dental Corps) is granted a temporary commission as a Flight Lt. (Dental) on attachment to the R.A.F.

Flight Lt. P. P. Hogan (Capt. Army Dental Corps) relinquishes his temporary commission on return to Army duty.

INDIAN MEDICAL SERVICE.

Capt. Ajab Singh Garewal to be Maj.

The probationary appts. of the undermentioned officers are confirmed:—To be Capt.: S. Hartley. To be Lts.: J. Acheson (now provl. Capt.), K. H. A. Gross, Shankar Sahai Bhatnagar, Bijeta Chaudhuri, E. V. Claydon, C. F. J. Cropper, V. H. Sarland, J. P. J. Little, E. A. O'Connor, and P. L. O'Neill.

Obituary.

LAURENCE BALL, *M.C.*, M.D., F.R.C.P. LOND.

WE regret to announce the death of Prof. Laurence Ball, which occurred at his consulting-rooms in Birmingham on Nov. 20th from an attack of angina pectoris which was the first and only manifestation of any cardiac disease.

Laurence Ball was born in Birmingham in 1884, his father being an architect in that city. He received his medical education at the University of Birmingham, and in 1907 graduated in Medicine in the University of London, where he later secured the gold medal in the examination for the M.D. After holding resident appointments, both medical and surgical, at the Birmingham and Midland Hospital for Sick Children, he served for a year as house physician at the Queen's Hospital, and for another year as resident medical officer at the General Hospital. He then went to London for post-graduate study in medicine, and took the diploma of M.R.C.P. in 1911. Not long afterwards he was appointed pathologist and assistant physician to the Queen's Hospital, where, in 1926, he became full physician. At the time of his death he was also physician to the Children's Hospital and to the Birmingham and Midland Hospital for Diseases of the Nervous System. At one time he was lecturer in pathology in the University, and in 1926 he was appointed joint professor of medicine. Two years later he was elected a Fellow of the Royal College of Physicians of London.

DR. LAURENCE BALL.
[*Photograph by Whitlock.*

Dr. Ball took a keen interest in pathology, and his sound practical knowledge in this department was often of great benefit to his colleagues. He was also much interested in medico-legal matters. Mr. Bertram Lloyd, to whom we are indebted for biographical details, says of him that he "was throughout devoted to his work, and took the greatest delight in it. The freshness and enthusiasm with which he would enter into the consideration of a knotty case or medico-legal problem was a constant source of stimulation to his colleagues. Although a very busy physician, he could always find time for another duty, and never appeared to be in a hurry. His patients had an affection for him which it is difficult adequately to describe. His professional manner inspired at once confidence, respect, and admiration for his wise judgment. Although much in request as a physician, it was as a teacher in the Medical School that he was pre-eminent. An eloquent speaker and a lucid teacher, his knowledge never seemed to fail him on any point. The students of the school crowded to his classes and held him in the highest regard. On personal grounds he was immensely popular. He was entirely devoid of vanity or affectation, and was possessed both of a deep fund and a keen appreciation of humour. Although temperamentally of a quiet and studious nature, he was constantly sought after by colleagues and students because of his attractive personality."

Dr. T. L. Hardy writes: "May I add my tribute to the memory of Laurence Ball, whose untimely death has removed from the ranks of the profession a sound physician and teacher of medicine, and a most lovable personality. I have enjoyed the privilege of his friendship for a matter of ten years, time enough in which to appreciate his many sterling qualities, for he combined in rare measure great modesty, charm of manner, and a love of the beautiful things in life and no less of its simple pleasures. He had a great capacity for friendship, a generous tolerance of the shortcomings of others, and he spoke ill of no man.

"Ball was a man of retiring disposition, rarely obtruding his opinions, but never failing those—and they were many—who sought them... He undoubtedly enjoyed life to the full, loving especially the big open spaces, and was never so content as when tramping among the hills of Cumberland or Wales with his friends. On such holidays his companionship was a thing of delight, for he was a man of wide culture and could talk with learning on many topics. He was, too, an amateur photographer of distinction, and his keen sense of beauty resulted in work of very high artistic merit. With children he possessed something akin to genius, and the joy his company brought to many families is a thing not easily forgotten.

"Ball contributed but little to medical literature and to research, holding the view that these things interfered with the proper discharge of his teaching duties, and it was to these that his energies were mainly devoted during the all too brief span of life allotted to him. As a teacher he was outstanding, whether in the lecture theatre, at the bedside, or in the post-mortem room, while his presentation of a case at a medical society was a model of lucid exposition. He was no specialist, indeed he heartily disliked the term, but was possessed of a wide knowledge of medicine in all its branches, knowledge which had been built up during many years in the post-mortem room. He was in the fullest sense of the term a general physician possessed of a maturity of judgment remarkable for one of his years. Yet though he has been taken at the outset of a brilliant career and has left behind him no written record of endeavour, his memory will endure in the hearts of his many friends, the students he loved to teach, and the patients, old and young, whom he delighted to serve."

In the course of service abroad in France and Italy during almost the whole of the late war, Dr. Ball was awarded the Military Cross, and was mentioned in General Plumer's dispatches for gallant and distinguished service in the field. He was unmarried, and is survived by his father.

TENBURY COTTAGE HOSPITAL.—This institution, founded in 1867, has been closed, and the building, which is expected to produce £1000, is to be sold. A committee has been appointed to consider the application of this sum and the £2000 of invested funds with a recommendation to give preference to home nursing purposes. The reason assigned for the closing of the hospital is the reduction in the number of patients caused by the introduction of the Worcester Hospital Contributory Scheme.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—There was an unusual incident at the annual festival dinner of this hospital at which the Duke of Gloucester presided last week. It was desired to raise £10,500, and the donations announced amounted to £10,478. It was suggested that two of the guests should toss for the privilege of providing the balance of £22. The Lord Mayor and Sir Leonard Lyle, the chairman of the hospital, tossed for £10 and the Lord Mayor lost. The Duke of Gloucester and Sir Leonard then tossed for the remaining £12, and the Duke had to pay.

Correspondence.

"Audi alteram partem."

MALARIA TREATMENT OF GENERAL PARALYSIS.

To the Editor of THE LANCET.

SIR,—Before the introduction of Wagner von Jauregg's treatment of general paralysis a terminal stage of this disease, characterised by extreme emaciation in spite of adequate nourishment, was common. I have seen as many as four cases exhibiting this condition in bed in hospital at one time. Kraepelin attributed the condition to endocrine disturbance. Reichardt is more definite and attributes it to a specific degeneration in the vegetative trophic centres in the hypothalamic region. It is our experience at Whittingham that this "conspicuous body-wasting termination" of general paralysis never occurs following malaria treatment. In the mass of medical literature on this subject I do not find this fact mentioned, and think our experience worth recording as it may, or may not, be confirmed, and the observation may help to explain the mode of action of malarial therapy concerning which so many theories have been advanced.

I am, Sir, yours faithfully,

R. M. CLARK.

Whittingham Mental Hospital, Lancashire, Nov. 25th, 1929.

ROSS AWARD FUND.

To the Editor of THE LANCET.

SIR,—Those of your readers who have subscribed to the Ross Award Fund will be interested to hear that the officer commanding the First Battalion, the Sikh Regiment at Razmak, Waziristan, India, has kindly sent a cheque for £15 towards the Fund, the amount having been chiefly subscribed by the men of that Battalion who willingly gave it from their pay (which is scarcely large). The O.C. goes on to explain that this fund is of particular interest to the Battalion because not only did Sir Ronald's father—General Sir Campbell Ross—command the Battalion as Colonel, when it was known as the 14th Sikhs, when Sir Ronald was born in India, but also Sir Ronald's brother—Captain C. Ross—was killed while serving with this Battalion in connexion with the Chitral Campaign. This Sikh Corps has been always celebrated as an extremely fine body of men who have faithfully helped this country in many campaigns.

Your readers will be further interested to know that the Fund has now reached £10,619 3*s.* 7*d.*, of which the *Straits Times*, Singapore, have contributed £3362 19*s.* 10*d.*, and the *Malayan Daily Express* Fund £75 15*s.* 4*d.* Donations should be sent to Lloyds Bank, Ltd., 110, High-street, Putney, S.W.15.

I am, Sir, yours faithfully,

JAMES BARR,
Chairman of the Ross Award Fund Committee.

Hindhead, Surrey, Nov. 24th, 1929.

THE ROYAL FREE HOSPITAL V.D. CLINIC.

To the Editor of THE LANCET.

SIR,—An annotation in your issue of Nov. 16th (p. 1053) speaks of the Royal Free Hospital Female V.D. Clinic as dealing with a considerable number of prostitutes. This belief about the Clinic is fairly widespread, I have met it in one quarter and another during the past five years, and it is quite wrong. If we can be said to specialise in any type of case, it is that of the unmarried mother, infected or probably infected, and for this reason referred to us by various social workers and philanthropic agencies from all parts of the country. The overwhelming majority of such cases are servants, domestic or hotel, and waitresses, and one of the rules of our hostels to which such cases are admitted is: "Save under exceptional circumstances remand cases or prostitutes are not suitable for admission to these hostels"—this for the guidance of social workers sending up cases.

We have, of course, a very considerable family attendance of married women and their children and a special clinic is held on Wednesdays from 2 to 4 P.M. for doctors' cases referred particularly to myself. During these hours married women only are seen. This is *not* to prevent their mixing with prostitutes, as may be suggested, but so that they may not be kept waiting on their first visit, especially as many of these are pregnant or recently delivered.

I apologise for intruding on your valuable space but must endeavour to remove this misconception, lest doctors fear to refer married women and children to the department in case they be offended by the type of patient waiting to be seen at the same time. There does not seem to be any V.D. clinic to which professional prostitutes go in any numbers. Whether this is because they have other arrangements or because, save in the richer circles of the demimonde who can, of course, afford private treatment, they are being ousted almost entirely by the amateur I do not know; but the fact remains that the professional prostitute is very rarely indeed met with in my clinic.—I am, Sir, yours faithfully,

MARGARET RORKE,
Director of the Female V.D. Department,
Nov. 25th, 1929. Royal Free Hospital.

THE TEACHING OF RADIOLOGY.

To the Editor of THE LANCET.

SIR,—"Seeing is believing" is almost a fetish among Americans; they are always seeking means of visualising disease. In England we rely almost exclusively on clinical methods, employing such a magnificent aid to vision as radiology only when destitute. The radiologist's or radiographer's task is to correlate, revise, and if necessary correct the clinical diagnosis in the *early* stages of disease.

Why does radiology persist in taking a back place here in England? Surely it is because the general practitioner has no means of learning what it will do that he does not seek its aid. For those specialising in the science there are excellent courses; these courses, like most text-books, deal chiefly with technique, which is just what the general practitioner does not want. There is a sharp distinction between those who know what radiology will do and those who can actually take the films. The most striking advances during the last ten years have not been by technicians but by clinicians with a knowledge of the capabilities of radiology; vide the use of lipiodol and sodium phenoliodophenolphthalein. One has only to scan the last few years LANCET'S to realise what a price surgeons put on radiology. Morriston Davies's "Surgery of the Lung and Pleura" is essentially clinical but half the illustrations are radiograms demonstrating pathological processes; one can see the progress of a disease in these radiograms in a most beautiful manner. This is the "pathology of the living."

The British Institute of Radiology is the proper and obvious place for such lectures to post-graduates; it is doubtful whether the student should be burdened with more lectures. Half a dozen lectures are all that are necessary to learn the principles on which to build up one's knowledge. The Council of the Institute, however, are afraid that there would be a mushroom growth in the number of installations to the detriment of radiology. This need never happen, since technique need not and should not be mentioned. The word "technique" is a perfect bug bear to the general practitioner. It alarms and deters him; he imagines that all sorts of abstruse electrical problems beset him. Technique should and will always be left in the hands of those who are prepared to undergo the

necessary training, as only good radiograms are worthy of and capable of interpretation.

A fortune is being spent abroad on the purchase of radium. Now radium is a double-edged sword; experts admit that they are only on the threshold of knowledge; whereas radiology is a very exact science resting on sound footings. If one-tenth of the money being spent on radium was devoted to the teaching of radiology, thousands of lives would be made more comfortable and years would be added to still more thousands—especially cancer patients, because by recognising the disease in its early stages, as radiology can, operations could be done before the outlook was hopeless.

In London there is a professor of almost every conceivable tongue, art, and science except radiology. Surely some benevolent body will come to the rescue and endow chairs and lectureships? If they do not, surely it is the State's duty to the National Insurance Fund to provide practitioners with facilities for learning what radiology will do.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 24th, 1929. A. P. BERTWISTLE.

DIAGNOSIS OF GASTRIC DISEASE.

To the Editor of THE LANCET.

SIR,—Dr. J. A. Ryle, in his closing remarks at the discussion of the Medical Society of London upon the Relative Value of the Different Methods of Diagnosis of Gastric Disease, is reported as saying that "the chief symptoms of carcinoma—anorexia, anæmia, and fever—were clinical, but the other methods should not be neglected" (THE LANCET, Nov. 16th, p. 1043). May I point out that by means of radiological examination carcinoma of the stomach can be detected before it gives rise to anorexia, anæmia, and fever. A carcinoma giving rise to these symptoms is invariably in an advanced stage of growth and produces a filling defect in the outline of the stomach which with careful radiological examination could be detected when a tenth or less in size. Indeed, it is possible by means of X ray examination to detect a growth of the stomach in the early stage of development.

I suggest that every patient over the age of 35 years who is complaining, for the first time in life, of gastric symptoms, should, before any treatment is given, have his or her stomach examined radiologically, with a view to determining the presence or absence of carcinoma. If this procedure is adopted, many cases of gastric cancer will be detected at any early stage of the disease, with a correspondingly more hopeful outlook for the patient.—I am, Sir, yours faithfully,

Leeds, Nov. 21st, 1929. W. H. ROWDEN.

THE SALARIES OF PUBLIC APPOINTMENTS IN SCOTLAND.

To the Editor of THE LANCET.

SIR,—Some time ago the Scottish Committee of the B.M.A. recommended the adoption of a modified scale of salaries in Scotland, it being understood that the Scottish Board of Health (now Department of Health) would back up these proposals officially. No very satisfactory reason was given to explain why salaries in Scotland should be lower than in England. It was suggested that Scotland is a poorer country (?) but that argument might just as well be held to apply to the panel capitation fee or any other form of remuneration for work under the State.

At the Representative Meeting of the B.M.A. where this proposal was finally adopted, it was argued that by starting somewhat lower the Scottish public health official would finish somewhat higher in the matter of salary than his English colleague, but as the English minimum for assistant medical officers is £600 and the Scottish scale is supposed to average £600 over a period of ten years, it is rather difficult to see where the Scottish official's advantage comes in. There were, of course, opponents of the scheme who knew perfectly well that if the scale were lowered certain Scottish local authorities would bid still lower. This is exactly what has happened, and it can only be a matter of time before other forms of remuneration, including the panel, are affected.

There have recently been a number of advertisements in the lay press for appointments (mostly under education authorities) offering salaries well below the modified scale which, be it noted, the Scottish Central Authority had promised to support. An example is Ayrshire Education Authority, which on Nov. 9th advertised for a whole-time assistant school medical officer with the D.P.H. and, if possible, experience in general practice at a salary of £450, rising by £20 to £550 with £50 travelling allowance. Thus at the end of six years the person foolish enough to accept this appointment will still be £50 below the B.M.A. minimum in England, besides probably being well out of pocket over the travelling. It is inconceivable how any local authority of importance can hope to get a medical man or woman who is any use at the work to come for such a salary; it looks almost as if some local authorities do not care how the work is done provided a certain amount of paper is filled up. The Scottish Health Department has in its hands the final confirmation of these appointments and their conditions, and it is up to the department to keep its bargain.

At the present time there is little inducement to go in for public health in Scotland, whatever platitudes Ministers and politicians may mouth about it. We are everlastingly being told of the value of school medical inspection and other public health work, but apparently this work can be done by anyone for the most paltry financial reward.

In Scotland the Public Health Service is particularly unfortunate in having very few men of outstanding character and determination in its ranks; many are not interested in the welfare of the Service as a whole or in the conditions under which assistants are asked to work. Moreover, the big cities set a bad example by appointing local graduates as a rule who may be able to accept low salaries for private reasons.

I am, Sir, yours faithfully,

Nov. 23rd, 1929. D.P.H.

Public Health Services.

MENTAL HOSPITAL REPORTS.

THE *West Riding Mental Hospital* at *Wakefield* publishes its 110th report, for the year 1928. There were 2350 patients on the register at the end of the year. The recovery-rate was 21·3 per cent., and the death-rate 8·2 per cent. Post-mortem examinations were held in 88·6 per cent. of possible cases. One case of typhoid fever occurred, and a carrier was detected. There were six cases of dysentery and four carriers were found, three of them having given a negative reaction when undergoing the routine test on admission. General paralysis has been treated with tryparsamide, and some of the cases have shown improvement. On the whole, the medical superintendent thinks that this drug may be said to have had a specific curative action on cases treated early enough. Two new clinical rooms and a new preparation room in the laboratory have been built, and a special room has been set aside for light therapy. The out-patient department served 58 new patients during the year. As many as 50 patients were allowed out on trial before discharge, and 49 of them were given money allowances. Parole was granted to 41 men and one woman beyond the estate, and to 169 men and 537 women within the grounds. One nurse obtained the nursing certificate of the General Nursing Council.

The *West Riding Mental Hospital* at *Storthes Hall, Kirkburton*, had 1246 patients on its books at the end of last year. The death-rate was 9·1 per cent., and

post-mortem examinations were made in 90·8 per cent. of cases. The death-rate from tuberculosis is 2 per cent. lower than it was in 1927, having come down to 6 per cent. The recovery-rate was 21 per cent., the lowest for many years. The medical superintendent attributes it to the large number of incurable patients admitted during the year. No less than 14 per cent. were idiots, imbeciles or epileptics. The number of patients usefully employed has been maintained, and the privilege of parole has been extended; a number of discharged patients were granted money allowances. There were three cases of typhoid and twelve of dysentery. General paralysis was treated with malaria for the first time last year, and six out of thirteen patients were improved, four being discharged. A visiting dentist has been appointed. All the patients admitted now have their blood examined by the Meinicke turbidity and Wassermann tests. The Meinicke reaction gave the same number of positive results as the Wassermann in 96 per cent. of cases, and seems to be a valuable auxiliary. The laboratory is now equipped to undertake all necessary investigations, and works in close correlation with the wards. During the year twelve attendants and nine nurses passed the final examination for the R.M.P.A. certificate. Of the present staff, 41 attendants and 21 nurses are certificated, and four attendants and five nurses are registered.

Wilts. County Mental Hospital.—There were 1146 patients on December 1st, 1928. The death-rate was 8·2 per cent. and the cause of death was verified by post-mortem examinations in 81·2 per cent. of cases. The recovery-rate was 25·8 per cent.; all but four patients discharged had a preliminary period of trial, 23 of them with a money allowance. The general health was good and there was no epidemic disease, but there were 23 cases of dysentery, one of paratyphoid B, and six of erysipelas. The out-patient clinics at Swindon and Trowbridge served 52 and 27 patients respectively. The housekeeper has had very good results in occupational training for the low-grade female patients. Eight nurses obtained their R.M.P.A. certificate during the year.

The *Inverness District Asylum* housed 720 patients on May 15th, 1929, while another 16 were out on probation. The recovery-rate for the year was 25·4 per cent., and the death-rate 10·7 per cent. Phthisis and senile decay accounted for more than half the deaths. On the whole the health of the patients was good, but there was an epidemic of influenza in the spring, and some cases of scarlet fever. The drought caused a very serious water shortage, but the new reservoir, completed last year, saved the situation. The medical superintendent expresses anxiety about the state of the hospital building, and thinks that the further hospitalisation of the institute requires careful consideration. A cinematograph apparatus was installed last October, and has been much appreciated. The visiting commissioner urges the provision of a workshop for occupational therapy, and of a comfortable detached home for the nurses, ten of whom gained their R.M.P.A. certficate during the year.

Lancashire and Cheshire Society for the Permanent Care of the Feeble-Minded.—The 30th annual meeting of the Society was held this year. There are now 103 women and 34 girls in the colony, and 132 men and 94 boys. One girl and two boys died during the year. There was a succession of epidemic diseases, but most of the patients made a good recovery. Sandlebridge receives patients from all over the country, and 234 of its patients have been in residence since they were small children.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 16TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 172 (the same last week); scarlet fever, 3227; diphtheria, 1759; enteric fever, 51; pneumonia, 1192; puerperal fever, 59; puerperal pyrexia, 109; cerebro-spinal fever, 10; acute poliomyelitis, 12; acute polio-encephalitis, 3; encephalitis lethargica, 17; dysentery, 15; ophthalmia neonatorum, 89. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Nov. 19th–20th was as follows:—240 under treatment, 17 under observation (last week 195 and 9 respectively), scarlet fever, 2833; diphtheria, 2686; enteric fever, 96; measles, 306; whooping-cough, 114; puerperal fever, 31 (plus 12 babies); encephalitis lethargica, 125; poliomyelitis, 8; "other diseases," 17. At St. Margaret's Hospital there were 9 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (3) from enteric fever, 29 (8) from measles, 9 (1) from scarlet fever, 12 (2) from whooping-cough, 38 (5) from diphtheria, 82 (16) from diarrhœa and enteritis under two years, and 75 (12) from influenza. The figures in parentheses are those for London itself.

The single death from enteric fever outside London was reported from Birmingham. Diarrhœa accounted for 7 deaths at Manchester, 6 at Birmingham, and 4 at Liverpool. There were 5 deaths from diphtheria at Liverpool; 3 deaths from measles at Bolton and Oldham, 2 each at Wolverhampton and Manchester.

The number of stillbirths notified during the week was 274 (corresponding to a rate of 47 per 1000 births), including 38 in London.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

HIGHLANDS AND ISLANDS MEDICAL SERVICE.

THE House of Commons went into Committee on Nov. 19th on the following money resolution in connexion with the Highlands and Islands (Medical Service) Additional Grant Bill:—

That, for the purposes of any Act of the present session to make provision with respect to an additional special grant for the purpose of improving medical service in the Highlands and Islands of Scotland, it is expedient to authorise the payment to the Highlands and Islands (Medical Service) Fund, in addition to the sum of £42,000 payable to the Fund under Subsection (1) of Section (1) of the Highlands and Islands (Medical Service) Grant Act, 1913, of such sum as may be annually voted by Parliament for the purpose.

Mr. YOUNG, Chairman of Committees, was in the chair.

Mr. ADAMSON (Secretary of State for Scotland), in moving the resolution said that in 1913 Parliament made special provision for the payment of a fixed amount of £42,000 per annum for the purposes of the improvement of the medical service in the Highlands and Islands and for other purposes connected therewith. Since that date the fund had been of inestimable benefit to the people in the remote parts of Scotland. It has been found that an additional sum of money was necessary and this resolution was being proposed for that purpose.

Major ELLIOT said that the Members of the Opposition fully agreed with the object of the resolution, and in view of the lateness of the hour, and on the understanding that fuller opportunity would be afforded, if necessary, for a discussion on the matter at a later stage, they were willing to agree to the resolution. The services which the resolution covered extended to a little more than half the area of Scotland and those services had been kept up in recent years by utilising balances unexpended during the war. The time had come when a larger amount was necessary.

Mr. ERNEST BROWN signified approval of the resolution on behalf of the Liberal Party.

The resolution was agreed to.

On the following day the resolution was agreed to on Report, and the Highlands and Islands (Medical Service) Additional Grant Bill was brought in and read a first time.

ILLEGITIMATE CHILDREN (SCOTLAND) BILL.

On Wednesday, Nov. 20th, the Illegitimate Children (Scotland) Bill was read a second time.

EDUCATION (SCOTLAND) BILL.

On Tuesday, Nov. 26th, Major ELLIOT asked for leave to bring in the Education (Scotland) Bill, a measure to enable

education authorities in Scotland to incur expenditure in supplying milk to children attending schools within their area. He said that the Bill followed out the rather remarkable series of tests and experiments upon the value of adding small quantities of vital substances to the ordinary diet or food, more particularly of growing animals and persons, which had been one of the features of research in the last few years. The last few years had shown most clearly that although the diet might be adequate in amount, and even contained all that was usually supposed to be necessary to produce a healthy full-grown creature, yet if certain small quantities of substances were lacking, the growing creature, be it child or animal, would not be fully formed, would not reach full maturity. All the work that had been done on what had been known as the vitamins was a striking example of that. Carrying out that line of investigation in the United States and elsewhere, experiments were made on the value of adding a small quantity of milk to the daily ration, first of all of animals, and then of growing children, and very remarkable and interesting results were obtained. These experiments were carried further in this country by the Medical Research Council, which in 1926 carried out a series of tests on boys under more or less controlled conditions, and under the management and scientific supervision of Dr. Corry Mann. Those results showed quite clearly that a remarkable increase in growth and in health, and even if he might say so in intelligence, was the result of the addition of a small quantity of milk to the daily ration of growing children.

Scientific Tests.

In the autumn of 1926 the Scottish Administration, in which he had the honour then to play a certain part, brought this to the notice of the Empire Marketing Board on the ground that they should attempt to apply these results in Scotland and elsewhere in the United Kingdom, since here was an admirable chance of encouraging the use of home products. In the case of fresh milk particularly the home producer had a natural advantage and preference over all other producers of which it is impossible really to deprive him. There was thus an excellent chance of improving health and of stimulating home production, particularly in the field of agriculture in which stimulation was highly desirable and very necessary. Accordingly a grant was made from the Empire Marketing Board and the tests were conducted over two years, in 1926 and 1927. The results were really very striking and remarkable. They thought it desirable not to publish them at once but to verify the 1926 results by the 1927 repeat tests. The tests were carried out in seven large centres—Peterhead, Aberdeen, Dundee, Edinburgh, Glasgow, Greenock, and Paisley, and also in Northern Ireland in the City of Belfast. There were some 2000 children under observation. It was under full scientific supervision, conducted in the first case by Dr. Orr, of the Rowett Institute, and Dr. Cruickshank, of the Board of Health, and in the second case by Dr. Leighton and his assistants, also of the Board of Health, now the Department of Health for Scotland. The results showed that adding a small additional ration of milk to the diet of the ordinary school child in Scotland led after a seven months' addition of this small ration to the surprising result that the ordinary child which had received milk was a quarter of an inch taller and three-quarters of a pound heavier than the child which had not received the ration. This was not due simply to a deficiency in feeding, because the children who were not receiving an additional ration of milk were given an additional ration of biscuit to make up for the food value of the milk which had been given, so that the excellent results obtained by milk were, so far as one could see, purely due to the small additional quantities of vital substances found in milk, but not found in the biscuit ration given as an alternative. It was a further interesting point that the additional biscuit ration did not lead to any increase of growth, either in height or in weight, over the children who received no additional ration at all, which seemed to point quite clearly to the fact that those children, take it by and large, were receiving sufficient food—that was to say an extra biscuit did not increase either their height or weight—but that they were receiving food which was deficient in some respects and the making up of that deficiency by a small ration of milk produced this surprising result of greater growth in height, increase in weight, and improvement in health. It was very striking that all observers said there was a sleekness of the hair, a polished condition about the nails, and there was a certain boisterousness and rebelliousness about the children on the milk diet which was not found in the cases of the children receiving the biscuit diet.

The children were of all ages from the beginning of school age to the end of it, from children of 5 and 6 up to children up to 13. The interesting thing was that this applied not merely to necessitous children, but practically to all the children, and therefore it seemed that it was scientifically proved that the diet of the ordinary child could be greatly improved by a small alteration of quality. The ordinary law just now only applied to the giving of substances in the case of children who were actually necessitous, and the full necessitous provisions had to be observed—that was to say, there was a compulsion on recovery of cost and many semi-penal provisions with which no doubt Members of the House were well acquainted. Milk obviously occupied a position something between a drug and a food, and a great many parents who came under no definition of necessity might quite reasonably find that by working in with a scheme of a local authority it would be possible either on payment of a proportion of the cost, or on payment of all the costs, or on payment of none of the costs, as the flexible nature of the scheme which he (Major Elliot) desired to introduce would permit, that their children would be greatly improved in health, although in fact they would not come under any category of necessity. The Bill would have the immediate effect of modifying the rigid provisions requiring and demanding recovery of all the costs and the supply only in cases where the parent was proved to be absolutely negligent in his care of the health of his child.

A Sound Investment.

The cost of these things tried out experimentally ran to something like 1*d.* per child per day. That was the full cost, but he would not suppose for a moment that the full cost in the case of every child would be borne by the local authority. He could not imagine any better form of investment, or anything that would be of more immediate value to a child's chances in life. Necessitated no doubt by the profession to which he and some other hon. Members belonged, he was a little sceptical about the brain, but he was perfectly solid about the brawn. If they could make a healthy child, he was certain it would pick up a great deal of its own education, whereas an unhealthy child might receive no advantage from the most careful schooling they could possibly give it. There had been other experiments of a converging kind, proving the benefit of this one. They were able to carry out a certain amount of milk feeding in Africa, where the same criticism of boisterousness and even of rebelliousness was brought against the children who had the milk ration as against those who had not. He therefore said that here they had a chance of something which could be immediately put into operation, something which would, for the expenditure of every penny of it, benefit home production, benefit agricultural production, and which would be as these tests had shown, of considerable and lasting benefit to the children of this country. In Scotland they had perhaps a more convenient area for the further examination which he proposed than in England. In Scotland agriculture, education, and public health were all under one Minister. The Bill proposed that the local authority could incur expenditure for this purpose by submitting a scheme which would have the approval of the Department of Health and of Education. It was a practical and immediate step. It was not an extravagant step, but one which they could reasonably ask the House to give a first reading to in order to get the Bill printed. He hoped thereafter at an early date they might be able to remit the Bill to the Scottish Grand Committee to amend as necessary, and that eventually it would be placed on the Statute Book.

Leave was granted to bring in the Bill, which was then read a first time.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 20TH.

Visits of Medical Experts to the Colonies.

Dr. MORGAN asked the Under Secretary for the Colonies how many medical experts, as the result of organisational departmental changes, had visited and reported on particular colonies; how many colonies had been so visited; what special health and medical problems were investigated; and if any reports based on these visits or investigations were available to Members of Parliament.—Mr. LUNN replied: I am not clear as to what organisational departmental changes are in the mind of my hon. friend, but I give the following list of visits to the colonies by medical experts which have been arranged by the Colonial Office during the last few years: Sir Wilfred Beveridge, Bahamas and other West Indian Islands; Dr. A. E. Horn, Cyprus; Dr. J. Hope Reford, Falkland Islands; Dr. A. T. Stanton (Chief Medical Adviser to the Secretary of State), Nigeria, Gold Coast, Sierra Leone, and Gambia; and Lieut.-Colonel S. P. James, Kenya, Uganda, and Tanganyika. The reports of Sir Wilfred Beveridge and Dr. Horn are available to any hon. Member who may desire to see them, and the report of Colonel James on his visit to East Africa, which was specially concerned with malarial problems, will be available shortly. In the other two cases no special report was

issued. I may add that a Commission of the League of Nations recently investigated the general health problems of the Western Pacific Islands, and it is understood that their report will be published shortly.

Yellow Fever and Malaria.

Dr. MORGAN asked the Under Secretary for the Colonies whether the Rockefeller Foundation was still continuing in different colonies, in coöperation with the Colonial Medical Service, its investigations into yellow fever and also its malarial surveys; how many of the latter had been completed; and if any extension of the survey system was in contemplation.—Mr. LUNN replied: Yes, sir. I am happy to say that the International Health Division of the Rockefeller Foundation is continuing to coöperate with the local medical authorities in investigations into yellow fever in Nigeria and other West African Colonies. It is also coöperating in malarial surveys in various West Indian and Western Pacific Islands and in Palestine, and this work is still proceeding. I hope that it will be possible to extend the system of malarial surveys in coöperation with this organisation as opportunity offers.

International Commission on Sleeping Sickness.

Dr. MORGAN asked the Under Secretary for the Colonies whether the special International Commission on Sleeping Sickness was still continuing its investigations in Uganda; whether any report had been received or issued; what were the names of the present members of the Commission; and what was the total staff working under that Commission.—Mr. LUNN replied: The International Sleeping Sickness Commission appointed by the League of Nations for work in Uganda completed its labours in June, 1927, and its final report was published by the League in March, 1928. The latter part of the question does not therefore arise. I may state that an International Conference held in Paris a year ago to review the Commission's work approved the principle that the lines of investigation opened up by the Commission should be followed up by the Governments concerned with their own resources. Special organisations are now investigating problems in connexion with sleeping sickness not only in Uganda, but in the Tanganyika Territory, Nyassaland, Nigeria, and the Gold Coast.

Vitamin Contents of Cod-liver Oil.

Mr. REMER asked the Under Secretary for the Colonies what steps he was taking to make widely known the favourable report as to the vitamin contents of cod-liver oil, as the result of investigations by the Empire Marketing Board.—Mr. LUNN replied: The Empire Marketing Board has not yet received the report upon these investigations, and I am therefore not in a position to say what steps may be found suitable for making the results known.

Dispensing in the Army.

Dr. VERNON DAVIES asked the Secretary for War if he was aware that his department was the only service department which employed men who were not trained pharmacists for the dispensing of medicines; and, seeing that such men could not be employed to dispense for the civil population under the National Health Insurance Act and were not employed by the Admiralty or Air Force, would he look into the matter.—Mr. T. SHAW replied: The hon. Member is under a misapprehension. Although some pharmacists are employed under the Admiralty on this duty, all three Service departments employ dispensers who are not pharmacists but who are trained as dispensers and carry out their duties under the general supervision of medical officers. I am advised, so far as the Army is concerned, that the present arrangements are satisfactory.

THURSDAY, NOV. 21ST.

Accused Persons Suffering from Encephalitis Lethargica.

Mr. SORENSEN asked the Home Secretary whether he intended to take action to see that accused persons known to have suffered from encephalitis lethargica received appropriate medical treatment and were not treated as criminals.—Mr. CLYNES replied: As regards accused persons sent to prison on remand or awaiting trial, if the medical officer has reason to believe that they have suffered from encephalitis lethargica a report on their medical history and present condition is made to the court, and the decision as to the action to be taken rests with the court.

Mr. OLDFIELD: Will the right hon. gentleman look into the matter of the amount of institutional treatment available for children over 14 years of age?

Mr. CLYNES: That is a very different question.

Dr. VERNON DAVIES: Are any steps taken to inquire into the previous medical history of these people or do the authorities wait for some evidence to be given to them that the case is encephalitis lethargica before making inquiries?

Mr. CLYNES: I think that my answer implies that something in the nature of a medical history is brought into the court.

Mr. SORENSEN asked the Home Secretary how many persons were convicted of moral offences during the last 12 months; and how many of that number were known to have suffered from encephalitis lethargica.—Mr. CLYNES replied: The figures available do not fit in exactly with the terms of the question, but perhaps they will serve the purpose of my hon. friend. In the two years ended March 31st, 1929, 114 prisoners were found, or suspected, to be suffering from the after-effects of this disease. As regards 16 of them, whose first conviction was before the onset of the disease, only one was in prison for a sexual offence; as regards the other 98, whose first conviction was after the onset of the disease, 22, or nearly one-quarter, were in prison for sexual offences.

Prevention of Water Famine.

Mr. REMER asked the Minister of Health what steps he proposed to take to deal with the serious shortage of water in many localities during the drought of last summer.—Mr. GREENWOOD replied: I have already issued a memorandum urging water authorities to examine their position, in view of the drought and possible difficulty in the future, and indicating the measures to be taken. In my opinion, the most practicable procedure is the formation of Advisory Regional Water Committees, who will systematically survey the needs of their districts and recommend the best and most economical means of meeting them, and I am constantly urging the formation of such committees.

Superannuation of Local Government Officers.

Mr. RAYNES asked the Minister of Health how many local authorities had adopted the Local Government and Other Officers' Superannuation Act, 1922; how many had adopted it for officers and workmen and the number of each included in designated posts; and how many officers and workmen over 65 years of age were still employed respectively by local authorities who had adopted the Local Government and Other Officers' Superannuation Act, 1922, and by local authorities who had not adopted that Act.—Mr. GREENWOOD replied: On Nov. 1st, 1929, 683 local authorities had availed themselves of the provisions of the Local Government and Other Officers' Superannuation Act, 1922, and the number of posts designated as established posts by these authorities was approximately 127,500. No exact information is available as to the numbers of officers and workmen occupying such posts, but the Departmental Committee on Superannuation estimated that on Nov. 1st, 1927, the 102,000 employees then occupying established posts included 35,000 officers and 67,000 servants. I have no information as to the number of employees of local authorities whose age exceeds 65 years.

Mr. THORNE: Has the right hon. gentleman power to compel those local authorities who are refusing to put this into operation to do so?

Mr. GREENWOOD: Under the present law I have no power to compel local authorities. That matter was raised by the Departmental Committee which reported two years ago and is now under my consideration.

Approved Societies and Additional Medical Treatment.

Mr. MANSFIELD asked the Minister of Health whether he proposed to make any alteration or amendment to the National Health Insurance Act to enable approved societies to give financial assistance towards the cost of any form of treatment, benefit, or otherwise, that a member might require, with less than five years' membership.—Mr. GREENWOOD replied: An approved society which is found on valuation to have a disposable surplus may adopt a scheme for contributing towards the cost of various forms of remedial treatment required by its members, such as dental, ophthalmic, hospital, or convalescent home treatment. Hitherto such assistance has been restricted to persons who have been members of the society for about five years, but a regulation has already been made under which the qualifying period of membership will from January next be reduced to two and a half years on the average.

Local Authorities and Rheumatic Diseases.

Dr. VERNON DAVIES asked the Minister of Health what grants, if any, were paid by his department to local authorities for the investigation or treatment of rheumatic diseases, especially among children.—Mr. GREENWOOD replied: Grants are available under the Maternity and Child Welfare Regulations for the experimental investigation and treatment of acute rheumatism in children under school age, but I am advised that this condition is rare amongst very young children. I understand that the Board of Education pay grants for similar purposes in the

case of children of school age, and that the Medical Research Council make grants for researches into rheumatism.

Viscountess ASTOR: Does the right hon. gentleman not think that the best way to deal with delicate children is to establish nursery schools?

Lieut.-Colonel FREMANTLE: Have the efforts of these three departments been coördinated in any way?

Mr. GREENWOOD: They are within the knowledge of the three Ministers concerned.

Lieut.-Colonel FREMANTLE: Cannot the three Ministers coöperate?

No further answer was given.

Bacteriological Examination of Milk.

Sir RENNELL RODD asked the Minister of Health whether, in view of the large number of deaths of infants from bovine tuberculosis, traceable to milk, recorded annually in medical reports, he was satisfied that the powers of supervision and control vested in local councils were duly exercised by them; and, if not, whether he would consider measures for their stricter application.—Mr. GREENWOOD replied: I am satisfied that local authorities generally are exercising their powers of supervision and control in an efficient manner, having regard to such difficulties as are caused by the mixing of milk and the delays necessarily involved in obtaining reports on bacteriological examinations. The matter will, however, continue to receive my careful attention.

Dr. VERNON DAVIES: Is the right hon. gentleman aware that the bacteriological examination of milk for tubercle is hopelessly inadequate in this country?

No further answer was given.

River Pollution.

Mr. FREEMAN asked the Minister of Agriculture whether, in view of the growing and serious menace of river pollution all over the country and of the inadequacy of existing powers to deal with it other action was contemplated. Mr. GREENWOOD (Minister of Health) replied: The whole question of river pollution is at present under consideration by the Joint Advisory Committee on River Pollution, and in particular they are considering measures to prevent pollution by trade effluents. They have issued a preliminary report in which they express the opinion that much more can be done, under existing powers, through the appointment of joint committees by the councils of counties and county boroughs. I am urging the authorities to set up such bodies.

Vaccine Lymph.

Mr. FREEMAN asked the Minister of Agriculture where and how Government lymph was now prepared; what animals were used in its preparation; and how many animals were so treated in 1928.—Mr. GREENWOOD (Minister of Health) replied: Government lymph is prepared at the Government Lymph Establishment at Hendon. My hon. friend will find a full statement of the technique and procedure on pages 15 to 17 of the Report of the Vaccination Committee, 1928. During 1928 438 calves and 38 rabbits were used in the preparation of the lymph.

MONDAY, NOV. 25TH.

Medical Experts and Seven-year Pension Cases.

Major COHEN asked the Minister of Pensions (1) whether he would give the House more information regarding the arrangements made for securing the assistance of independent advice in over seven years' cases from medical experts nominated by the Presidents of the Colleges of Physicians and Surgeons; whether the advice of the experts would be accepted and acted on by the Ministry; and whether all cases recommended, after investigation, by local war pension committees where he was not able to agree with the Ministry decision would be referred to the independent experts. (2) What was the method he intended to adopt in order to ensure that applicants for pensions outside the seven years' limit were given explicit opportunity to produce evidence; and (3) whether, in view of the fact that it was proposed to make use of the statutory powers of the local war pension committees to hear and investigate causes of complaint from dissatisfied applicants in connection with the over seven years' cases, he would take steps to ensure that the fullest possible information was placed at the disposal of the war pension committees, especially where their recommendations were not accepted by headquarters, in order that the committees might be in a position to deal with and investigate cases of complaint.—Mr. F. O. ROBERTS replied: It is not in my judgment practicable or desirable at this stage to define minutely the procedure on points which experience alone can properly determine. I may say, however, that all applicants will be expressly invited by the area offices of the Ministry to state their own cases in writing and to furnish evidence in support of them. Free use will be made of the advice of the independent medical experts alluded to in all cases where there is material conflict of evidence, including cases recommended after due investigation by war pensions committees, and the fullest weight will be given to their advice, though I am naturally unable, consistently with my own responsibility in the matter, to bind myself to accept their opinion in every case. War pensions committees will, as far as possible, be made acquainted with the grounds for rejection of any case recommended by them after investigation where they may find this information necessary in order to assist them in dealing with renewed applications.

Narcotic Drugs for Medical Purposes.

Mrs. HAMILTON asked the Home Secretary the total amount of opium and other narcotic drugs required annually for medical needs in Great Britain in accordance with the formula worked out by the Health Committee of the League of Nations; the actual amount of opium derivatives and narcotic drugs of all categories manufactured in Great Britain in the latest year for which figures were available; and the actual amount of narcotic drugs of all categories exported from Great Britain in the latest year for which figures were available.—Mr. CLYNES replied: The Health Committee of the League of Nations estimated (but with some qualifications) that in countries possessing a highly developed system of medical assistance the maximum requirements of opium and its alkaloids and derivatives for medical and scientific purposes were, in terms of raw opium with 10 per cent. morphine, 4·50 milligrammes per head per year, and of cocaine 7 milligrammes per head per year. Upon the basis of this calculation and with an estimated population of 45,625,000 the maximum requirements of Great Britain and Northern Ireland were in 1928: 45,263 lb. of raw opium and 704 lb. of cocaine. The quantities manufactured in Great Britain in 1928 of the drugs to which the Dangerous Drugs Act apply were as follows:—

Medicinal opium	6,859 lb.
Morphine and its salts	9,056 ,,*
Diacetylmorphine and its salts	675 ,,
Cocaine and its salts	308 ,,

* Including 4868 lb. used in the manufacture of derivatives of opium or morphine which are not within the Dangerous Drugs Acts.

The quantities exported in 1928 were:—

Raw opium	15,956 lb.
Medicinal opium	3,394 ,,
Morphine and its salts	3,114 ,,
Diacetylmorphine and its salts	377 ,,
Cocaine and its salts	278 ,,

Figures are not available in regard to opium derivatives which are not subject to the provisions of the Dangerous Drugs Acts.

Cocaine and Cocaine Hydrochloride.

Mr. DAY asked the Home Secretary whether he had any information as to the amount of cocaine and cocaine hydrochloride that had been manufactured in Great Britain under the authority of the Home Office during the three years ended to the last convenient date.—Mr. CLYNES replied: Since the coming into force of the Dangerous Drugs Acts no cocaine was manufactured until 1928, when 1047 oz. of cocaine and 3887 oz. of the salts of cocaine were manufactured under Home Office licence.

MILLER GENERAL HOSPITAL.—This Greenwich hospital, which was founded in 1783 as a dispensary, is in danger of being compelled to close a considerable proportion of its beds. Its debt to the bankers amounts to £40,000, no more money can be borrowed, and at least £50,000 is needed to remove existing difficulties. In the last 17 years the number of beds has increased from 22 to 169, including 18 at the seaside for children. In the same period the number of out-patients has nearly doubled, and is now close upon 200,000. The hospital serves a large portion of south-east London.

DONATIONS AND BEQUESTS.—The late Sir William Towle, of the Midland Railway Company's hotels, left, among other bequests, a sum to provide an "Elizabeth Towle Bed" at the Middlesex Hospital.—The Cancer Hospital, Fulham, has received an anonymous donation of £5000.—Mr. Theodore Pim, of Snowdenham Hall, Bramley, Surrey, stockbroker, left, among other bequests, £2000 to the Royal County Hospital, Guildford; £1000 each to the London, St. Bartholomew's, and Charing Cross Hospitals; and £500 each to the Dreadnought Seamen's Hospital; Treloar's Cripples' Home, Alton; the Royal Free Hospital; the Royal London Ophthalmic Hospital; and the Meath Hospital, Dublin.—Mr. Percy Crossman, of Great Bromley Hall, Colchester, left £1000 each to the Essex County Hospital and the London Hospital.

Medical News.

UNIVERSITY OF OXFORD.—On Nov. 23rd the following degrees were conferred :—

D.M.—G. P. Wright (in absentia).
M.Ch.—C. W. Flemming.
B.M.—J. A. Eyres.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful :—

Surgery.—W. J. D'Rosario, Guy's Hosp. ; I. F. W. Edwards, St. Mary's Hosp. ; W. J. Frith, London Hosp. ; B. C. Ghose, Durham ; W. A. R. Mailer, St. Bart.'s Hosp. ; I. W. H. Mansfield, Middlesex Hosp. ; E. J. O'Loughlin, Birmingham ; and S. Ramadas, St. George's Hosp.

Medicine.—R. Gilmore, Manchester ; J. Gordon, St. Mary's Hosp. ; M. Naylor, Sheffield ; A. Scher, Basle and London Hosp. ; and L. J. P. Sonomenho, Lisbon.

Forensic Medicine.—J. Britanischski, Berlin and London Hosp. ; R. F. M. Child, St. Mary's Hosp. ; A. Kellner, London Hosp. ; E. E. Le Feuvre, St. Mary's Hosp. ; M. Naylor, Sheffield ; A. Scher, Basle and London Hosp. ; L. J. P. Sonomenho, Lisbon ; and G. W. Sturgess, St. Bart.'s Hosp.

Midwifery.—P. S. Balachandran, Middlesex Hosp. ; K. C. Bhattacharyya, St. Thomas's Hosp. ; A. Buch, St. Mary's Hosp. ; W. J. D'Rosario, Guy's Hosp. ; I. F. W. Edwards, St. Mary's Hosp. ; A. D. H. Hugo, Guy's Hosp. ; T. C. Keble, St. Mary's Hosp. ; W. A. R. Mailer, St. Bart.'s Hosp. ; C. G. Nicol, St. Mary's Hosp. ; and D. Ram Annamalai, London Hosp.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery : P. S. Balachandran, K. C. Bhattacharyya, R. Gilmore, and E. J. O'Loughlin.

UNIVERSITY OF DUBLIN : *Trinity College.*—At recent examinations the following candidates were successful :—

M.CH.

J. C. Fouché and H. E. Murray.

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Medicine.—E. F. St. J. Lyburn, W. R. Johnston, Arnold Rose, Josephine M. Enright, Lilla M. Spiller, W. B. Hamilton, D. G. M'Caully, W. A. Y. Knight, F. O. Pilkington, A. J. Garde, G. F. West, Dora G. Bradley, R. P. M'Carrigle, Aaron Rakoff, R. E. Hemphill, F. M. Lyons, and F. S. Mackenna.

Surgery.—*G. B. Thrift, G. R. Beare, Kathleen A. Wilson, E. S. Tweedy, M. E. Kirwan, G. K. Graham, E. J. M. Bam, J. N. U. Russell, Frances E. Wilson, Dora G. Bradley, J. F. K. MacCarthy-Morrogh, and J. M. M'Elligott.

Midwifery.—*A. H. Thompson, *P. L. O'Neill, *Reginald Bowesman, J. M. Gibbon, Daniel Nolan, F. P. FitzGerald, Annie E. Thompson, T. H. Dockrell, H. H. G. Dorman, D. G. M'Caully, A. A. Lisney, J. T. Robinson, and Ruth R. Armstrong.

FINAL EXAMINATION FOR B. DENT. SC.

Dental Surgery and Pathology, &c.—D. D. Craig.

* Passed on High Marks.

UNIVERSITY OF LONDON.—At a meeting of the Senate on Nov. 20th Dr. G. A. Harrison was appointed as from Oct. 1st to the University Readership in Chemical Pathology tenable at St. Bartholomew's Hospital Medical College.

Dr. Harrison was educated at Oundle and Caius College, Cambridge, where he took a first-class in Part I. of the Natural Sciences Tripos in 1915. After clinical work at Ancoats Hospital, King's College Hospital, and elsewhere, he qualified in 1917, and went out to Mesopotamia, where he gained experience of tropical diseases. From 1919 to 1924 he was biochemist to King's College Hospital, after which he spent two years as biochemist to the Hospital for Sick Children, Great Ormond-street. Since 1926 he has been chemical pathologist to St. Bartholomew's Hospital. He was awarded the Raymond Horton-Smith prize on graduating as M.D. Camb. in 1925.

Sir Cooper Perry was appointed a member of the Board of Management of the London School of Hygiene and Tropical Medicine.

The Senate invites applications for the University chair of social biology tenable at the London School of Economics.

UNIVERSITY OF CAMBRIDGE.—The Raymond Horton-Smith prize given for the best M.D. thesis of the academic year, has been awarded to Mr. Wilfred Shaw for his thesis on Irregular Uterine Hæmorrhage. Mr. Shaw contributed a paper on this subject to the Spring number of the *Journal of Obstetrics and Gynæcology of the British Empire.*

ROYAL PHOTOGRAPHIC SOCIETY.—An exhibition of radiography will be held at 35, Russell-square, W.C., from Dec. 4th to Dec. 21st (10 A.M. to 5 P.M. daily except Sundays.) At 7 P.M. on Monday, Dec. 9th, Prof. W. L. Bragg, F.R.S., will give a popular lecture on X Ray Optics.

INSTRUCTION IN PSYCHOLOGICAL MEDICINE.—A programme of lectures and practical courses of instruction for a diploma in psychological medicine, beginning on Jan. 7th, 1930, has now been issued by the Maudsley Hospital, and may be had from the director of the Central Pathological Laboratory at the hospital, Denmark Hill, London, S.E. 5.

LONDON HOSPITAL MEDICAL COLLEGE.—The Liddle triennial prize for 1929-30, of the value of £120, will be awarded for an essay on the Cause and Incidence of Duodenal Ulcer. The prize is open to public competition, and the conditions of entry may be obtained from the Dean of the Medical College. Essays must be delivered at the hospital not later than May 31st.

OLD EPSOMIAN CLUB.—The annual general meeting of this club will be held at the Hotel Great Central, Marylebone, N.W., at 6.30 P.M. on Thursday, Dec. 12th, and will be followed by the annual dinner at 7.15 for 7.30. The chair will be taken by Brigadier-General G. T. Mair, and all Old Epsomians, whether members of the club or not, are invited to be present on this occasion. Attention is directed to the change of restaurant on this particular occasion.

YORKSHIRE ASSOCIATION OF GLASGOW UNIVERSITY GRADUATES.—The annual dinner of this Association will be held in the Great Northern Hotel, Leeds, at 7 P.M. on Friday, Dec. 6th. All graduates resident in Yorkshire or the surrounding areas are eligible for membership and are invited to the dinner. The guest of the evening will be Prof. J. Graham Kerr, F.R.S. Further information may be had from the hon. secretary, Dr. W. MacAdam, 40, Park-square, Leeds.

INFANTS' HOSPITAL, VINCENT-SQUARE.—Mr. Robert Mond, who has been a constant and generous benefactor to the hospital, has made a gift of £25,000 to the extension fund. The gift will be payable over the next seven years, and will bring up the total amount given or promised to the extension fund to well over £100,000.

ROYAL SURGICAL AID SOCIETY.—The sixty-seventh annual meeting of this Society will be held at the Mansion House, London, at 4 P.M. on Tuesday, Dec. 3rd, with the Lord Mayor in the chair.

HUNT MEET AT A HOSPITAL.—The South Oxfordshire hunt met recently at the Wingfield Orthopædic Hospital among the patients in the open air. The hounds are stated to have "enjoyed the novelty almost as much as the young patients."

ROYAL MEDICAL BENEVOLENT FUND.—A meeting of the Vice-Presidents was held at 10, Wimpole-street on Nov. 6th in response to invitations from Sir Thomas Barlow, who explained the position of the Fund, the financial details being added by Sir Charters Symonds. Various speakers in the room made suggestions for the increase of the regular income, and the general conclusion was that, while the work of the Fund is and had been of unspeakable value, and while its management was admirable, the objects for which it existed were insufficiently appreciated by the medical profession. Various steps were proposed to make the Fund better known.

QUEEN ALEXANDRA HOSPITAL, MILLBANK.—A new wing, consisting mainly of a spacious out-patient department, was opened on Nov. 26th by the Prince of Wales. The Prince was received by the Director-General, Lieut.-Gen. H. B. Fawcus. Certain members of the staff of the hospital were presented to the Prince : Bt. Col. Ryan, O.C. Hospital ; Lieut.-Col. Garforth, Engineer Officer ; Col. Purser, London Dir. A.D.M.S. ; Maj.-Gen. Ensor, D.D.M.S. East. Cd. ; Miss Osborne, Matron-in-Chief ; Major Johnson, Registrar ; Captain Baxter, Quartermaster ; Miss Mackay, Matron ; Col. Harrison, Col. Kennedy, and Col. De La Cour, Consultants. The civilian consulting staff presented included Mr. Victor Bonney, Mr. E. D. D. Davis, Sir T. Crisp English, Prof. E. H. Kettle, Sir Wm. Lister, Dr. H. MacCormac, Dr. A. G. Phear, Mr. S. Gilbert Scott, Sir John Thomson-Walker, and Mr. A. E. Webb Johnson. The Prince then proceeded to inspect the three floors of the new wing. This contains X ray rooms, departments for eye, ear, nose, and throat, dentistry work, and massage. At the top of the building, which is admirably designed, spacious, and light, is a well-arranged and equipped pathological laboratory. The Prince spent over half an hour in the building, and expressed himself as delighted with what he had seen. The commandant and officers of the R.A.M.C. Headquarter Mess received the visitors in the mess after the ceremony.

EXTENSION OF HARROW HOSPITAL.—This hospital is to be extended at a cost of £25,000. There will be accommodation for a further 30 patients and 15 nurses.

Dr. T. N. Kelynack, after nearly 28 years as physician to the Mount Vernon Hospital, has been appointed consulting physician and a member of the council of management.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Dec. 3rd.—8.30 P.M., ORTHOPÆDICS. Discussion on Minor Injuries about the Elbow-joint. Opener: Mr. W. H. Ogilvie. To be followed by Mr. Watson Jones, Mr. Jenner Verrall, and others. 8 P.M., PATHOLOGY. Meeting at the Royal Army Medical College, Millbank, S.W.

WEDNESDAY.—5 P.M., HISTORY. Sir William Hale-White: The Medical Boswells. Dr. G. C. Peachey: The Book-plates of Medical Men (with lantern slides). 8.30 P.M., SURGERY. Pathological evening.

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) The Diagnostic Value of X Ray Examination of the Temporal Bone, and the Diagnosis of Eighth Nerve Tumours. Papers by Dr. Elsie Mann, Dr. Graham Hodgson, Mr. T. H. Just, Dr. W. T. Gardiner, Dr. T. B. Jobson, and Mr. T. B. Layton. Cases and radiograms will be shown by Mr. C. Gill-Carey, Mr. E. Watson-Williams, Dr. Imrie, and Dr. Gardiner. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Cases will be shown by Mr. L. G. Brown, Dr. Dan McKenzie, Sir StClair Thomson, Sir James Dundas-Grant, Mr. V. E. Negus, Mr. H. A. Kisch, Mr. J. D. McLaggan, Mr. Archer Ryland, and others. 8.30 P.M., ANÆSTHETICS. Discussion: Anæsthesia in Rectal Surgery. Opener: Dr. J. K. Hasler.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, Dec. 2nd, to SATURDAY, Dec. 7th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., lecture by Mr. Harold Kisch: Aches and Pains in the Throat. No fee. Tues., 8.30 P.M., M.R.C.P. lecture by Dr. Kinnier Wilson: "Fits"; Varieties; Pathogenesis; Relation to Narcolepsy, Catalepsy, Syncope, &c. Fri., 8.30 P.M., at 10, Bedford-square, W.C., M.R.C.P. lecture-demonstration by Dr. Knyvett Gordon: Diagnosis of Bacterial Infection (illustrated by the epidiascope, followed by a laboratory demonstration).—HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale. Thurs., 2 P.M., demonstration by Dr. Russell Brain. No fee.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Fri., 4 P.M., lecture-demonstration by Mr. C. A. Joll: The Early and Late Results of Operations for Exophthalmic Goitre. No fee.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Practitioner's Course, 4 to 5.45 P.M.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E., and THE INFANTS HOSPITAL, Vincent-square, S.W. Afternoon courses for two weeks. Further particulars from the Fellowship of Medicine.

UNIVERSITY OF LONDON.

THURSDAY, Dec. 5th.—5 P.M. (in the Lecture Hall of the Royal Society of Medicine), Dr. Harris P. Mosher (Harvard): The Lower End of the Œsophagus at Birth and in the Adult. (The Semon Lecture.)

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

MONDAY, Dec. 2nd.—5 P.M., Mr. J. C. Dawes, M.I.Mech.E.: Disposal of Refuse.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Dec. 2nd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations. 4.30 P.M.: Demonstration on Practical Neurology by Dr. L. R. Yealland.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Dec. 2nd.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Wards.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw, Medical Out-patients. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. Dr. Scott Pinchin: Medical Out-patients.

THURSDAY.—11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.

Daily, 10 A.M. to 5 P.M., Medical, Surgical and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.

THURSDAY, Dec. 5th.—9 P.M., Mr. C. P. Wakeley: Diseases of the Breast and Their Treatment.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Dec. 3rd.—5 P.M., Dr. A. C. Roxburgh: Cutaneous Syphilis (1).

THURSDAY.—5 P.M., Cutaneous Syphilis (2).

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

(Intensive Week.)

MONDAY, Dec. 2nd.—2.15 P.M., Mr. Kenneth M. Walker: Urinary Calculi. 3.15 P.M., Mr. A. M. Zamora: Some Points About Mastoid Infection.

TUESDAY.—2.15 P.M., Mr. T. T. Higgins: Use of Sodium Morrhuate in the Injection Treatment of Varicose Veins. 3.15 P.M., Dr. A. Lisle Punch: Bronchiectasis.

WEDNESDAY.—2.15 P.M., Dr. Bernard E. Schlesinger: Ward Demonstration of Cases. 3.15 P.M., Dr. H. C. Semon: The Problem of the Trade Dermatoses in General Practice.

THURSDAY.—2.15 P.M., Mr. Frederick Roques: Some Modern Obstetric Methods. 3.15 P.M., Mr. E. Wolff: Headache.

FRIDAY.—2.15 P.M., Dr. Bruce Williamson: The Arrhythmias in General Practice. 3.15 P.M., Dr. C. Gouldesbrough: Osteo-arthritis.

TUESDAY.—3.15 P.M., Dr. P. O. Ellison: Investigation of Disease.

SOUTH-WEST LONDON POST-GRADUATE SOCIETY, St. James's Hospital, Ouseley-road, Balham, S.W.

TUESDAY, Dec. 3rd.—4 P.M., Mr. L. E. Phillips: Disorders of the Menopause.

CHADWICK PUBLIC LECTURES.

TUESDAY, Dec. 3rd.—8.15 P.M. (in the Inner Temple Hall, entrance from Strand and Fleet-street), Mr. W. A. Robson, Barrister-at-Law: Public Health Law and Administration.

PEOPLE'S LEAGUE OF HEALTH, 12, Stratford-place, W.

FRIDAY, Dec. 6th.—6 P.M. (at the Medical Society of London, 11, Chandos-street, W.), Sir Thomas Oliver: The Mechanised Age of To-day and its Probable Effect on the Human Race.

BRITISH INSTITUTE OF RADIOLOGY.

WEDNESDAY, Dec. 4th.—2.30 P.M. (in the Central Hall, Westminster), official opening of the Exhibition and Annual Meeting by the Rt. Hon. Arthur Greenwood, the Minister of Health. 3.15 P.M., Prof. G. Forssell: Radiotherapy of Malignant Tumours in Sweden. (Mackenzie Davidson Memorial Lecture.)

THURSDAY.—6 P.M., Prof. A. S. Eddington: X Rays in the Stars. (Silvanus Thompson Memorial Lecture.)

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Dec. 4th.—4 P.M., Dr. A. C. Jordan: Dress in Relation to Health and Disease.

ANCOATS HOSPITAL, Mill-street, Manchester.

THURSDAY, Dec. 5th.—4.15 P.M., Dr. G. J. Langley: The Treatment of Empyema.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Dec. 3rd.—4.15 P.M., Dr. Crighton Bramwell: Coronary Thrombosis.

FRIDAY.—4.15 P.M., Dr. H. Dove Cormac: Some Common Forms of Mental Disorder.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

TUESDAY, Dec. 3rd.—8.45 P.M. (in the Physics Lecture Room), Dr. Maurice Davidson: Intrathoracic and Pulmonary New Growths (preceded by an exhibition of pathological specimens). (Cancer Lecture.)

FRIDAY.—3.30 P.M., Mr. Ferguson Wilson: Surgical Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Dec. 4th.—4.15 P.M. (in the Ear, Nose and Throat Hospital). Ear, Nose and Throat Cases by the Staff.

Appointments.

ELLISON, DOROTHY, M.B., Ch.B. Edin., has been appointed Junior Resident Medical Officer, Worcester Infirmary.

ROSS, A. T., M.D., Ch.B. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Mevagissey District of Cornwall.

SHARMAN, A., M.B., Ch.B. Glasg., Surgical Research Officer, Royal Samaritan Hospital for Women, Glasgow.

SNELL, W. E., B.Sc. Lond., L.R.C.P. Lond., M.R.C.S., Tuberculosis Officer, Royal Northern Hospital Dispensary.

Stafford General Infirmary:—CAMPBELL, A. V., M.D. Liverp., D.P.H., and GILL, A. W., M.D. Edin., Hon. Visiting Physicians.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital, 91, Finchley-road, N.W.—Hon. Radiologist. Hon. Surg. Reg. Also Two H.S.'s. Each at rate of £150.
Barnstaple, North Devon Hospital.—H.S. At rate of £150.
Birmingham, Queen's Hospital.—Res. H.S. to Ophth. and Ear, Nose and Throat Dept. Res. H.S. to Cas. Dept. Each £70. Jun. R.M.O. £100. Also Res. Anæs. £70–£100.
Blackburn County Borough.—Asst. M.O.H., &c. £600.
Brighton, Royal Alexandra Hospital for Sick Children.—H.P. £100.
Bristol Royal Infirmary.—H.S. to Ear, Nose and Throat Dept.
Buxton, Devonshire Hospital.—Asst. H.P. At rate of £150.
Cairo, Egyptian University, Faculty of Medicine.—Two Surgical Tutors. £E35 monthly.
Cancer Hospital (Free), Fulham-road, S.W.—H.S. At rate of £100.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. First Assists. for Out-patient Dept.
Charing Cross Hospital.—Surg. Reg. £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.
Colonial Medical Service.—M.O.'S. East Africa, £600. Malaya, $500 per month.
Dewsbury and District General Infirmary.—H.S. £200.
Dreadnought Hospital, Greenwich.—H.P. and H.S. At rate of £110. Also Med. Supt. £300.
Dudley Guest Hospital and Eye Infirmary.—Asst. H.S. £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—H.P. and Cas. O. At rate of £150.
Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250.
Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250. Also Phys. for Electro-Therapeutic Dept.
Great Yarmouth County Borough.—Asst. M.O.H., &c. £600.
General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.
Grosvenor Hospital for Women, Vincent-square, S.W.—Hon. Anæsthetist. Also Res. M.O. At rate of £100.
Hampshire County Council.—Asst. County M.O. £600.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S. Also H.P. Each at rate of £100.
Harrogate Infirmary.—Sen. and Jun. H.S.'s. At rate of £150 and £100 respectively.
Hertford County Council.—Asst. M.O.H. for Maternity and Child Welfare Services. £600.
Hertford County Hospital.—Hon. Radiologist. Also Hon. Pathologist.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £100. Also Part-time Jun. Cas. O. At rate of £150.
Huddersfield County Borough.—Asst. M.O.H. £500.
Institute of Ray Therapy, 152, Camden-road, N.W.—Jun. M.O. At rate of £150.
Italian Hospital, Queen-square, W.C.—Two Hon. Surg.
Leeds City.—Chief Asst. M.O.H. £900.
Liverpool Hahnemann Hospital.—H.S. At rate of £100. Also Hon. Path. £25.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.
London Hospital, E.—Cardiographic Dept.—Paterson Research Scholar. £400.
London Lock Hospital, Dean-street and Harrow-road, W.—Second Anæsthetist. 1 guinea each attendance.
London Skin Hospital, Fitzroy-square, W.—Hon. Physician and Hon. Pathologist.
London University.—Geoffrey Duveen Travelling Studentship. £450.
Manchester Ancoats Hospital.—H.S. £100. Asst. M.O. for V.D. Clinics. 1 guinea per attendance. Asst. Pathologist. Also Med. Reg. and Surg. Reg. Each £100.
Manchester, Baguley Sanatorium.—Sen. Asst. M.O. £500.
Manchester Northern Hospital for Women and Children, Cheetham Hill-road.—Sen. H.S. Also Jun. H.S. £130 and £100 respectively.
Manchester Royal Infirmary.—Res. M.O. £200. Asst. Res. Surg. O. At rate of £150. Asst. Surg. O. for Gynæcological Dept. £35. Also Asst. Surg. O. for Central Branch. £75.
Manchester, Salford Royal Hospital.—Res. Surg. O. £200. Also Two Res. H.S.'s to Special Depts. Each at rate of £125.
Metropolitan Hospital, Kingsland-road, E.—Asst. S. Also Two Anæsthetists.
Ministry of Health.—Five M.O.'s. Each £887.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Nuneaton Borough.—Asst. M.O.H. £600.
Plaistow Fever Hospital, E.—Jun. Asst. M.O. At rate of £300.
Poplar Hospital for Accidents, Poplar, E.—Hon. Visiting Surgeon.
Preston, Biddulph Grange Orthopædic Hospital.—Jun. H,S. At rate of £150.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Clin. Assts.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O. £200. H.P. and Cas. O. £150. Also Three H.S.'s. and One H.P. Each £120.
Radium Institute, Riding House-street, W.—H.S. £150.
St. Bartholomew's Hospital, E.C.—Physician.
St. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C.—Clin. Assts.
Salisbury General Infirmary.—Two H.S.'s.
Sheffield Royal Infirmary.—Clin. Asst. to Medical Depts. £300.
Southport General Infirmary.—Jun. H.S. £100.
South Shields, Ingham Infirmary.—Sen. and Jun. H.S.'s £200 and £150 respectively.
Sutton, Surrey, Downs Hospital.—Jun. Asst. M.O. £500.
Tilbury Hospital, Essex.—Med. Supt. £250. Also H.S. At rate of £150.
Torquay, Torbay Hospital.—H.P. £175.
Western Australia, Lunacy Department.—Jun. Asst. Res. M.O. £456.
West London Hospital, Hammersmith-road, W.—H.P., H.S. Aural and Ophth. H.S. and Asst. Cas. O. Each at rate of £100.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. Pathologist. £250.
Wigan Infirmary.—Third H.S. £150.
Willesden General Hospital N.W.—Clin. Asst. for Surgical Out-Patient Session.
Wilts County Council.—Asst. M.O.H. and Asst. School Med. Inspector. £600.
York County Hospital.—Hon. M.O. for Massage and Electro-Therapeutic Dept.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at King's Cliffe (Northants).

Births, Marriages, and Deaths.

BIRTHS.

BLACKER.—On Nov. 19th, at The Châlet, Esher, the wife of Carlos Paton Blacker, M.C., M.A., M.R.C.P., of a son.

JACKSON.—On Nov. 21st, at Mount Jocelyn, Crediton, Devon, the wife of L. N. Jackson, M.D., of a daughter.

RICHES.—On Nov. 19th, at 4, Walton House, Longford-street, Regent's Park, the wife of E. W. Riches, M.C., M.S., F.R.C.S., of a daughter.

SCOTT.—On Nov. 21st, at Stagsden, Bournemouth, the wife of Dr. Maitland Scott, of a son.

MARRIAGES.

ADAM—LLOYD.—On Nov. 16th, in London, Major Walter Eustace Adam, M.C., R.A.M.C., to Phyllis Joan, elder daughter of the late Captain Walter Lloyd, Royal Welsh Fusiliers, and of Mrs. Lloyd, Queen Anne's-mansions, St. James' Park, S.W.

BRUCE—MYERS.—On Nov. 19th, at St. John the Baptist's, Chester, George Bruce, M.A., M.B., C.M., Fairford, Cults, Aberdeen, to Frieda Elizabeth, younger daughter of the late Rev. Arthur Myers, M.A., and of Mrs. Myers, The Cottage, Melbourne, Derby.

WARD—NICHOLS.—On Nov. 14th, at Westminster Cathedral, Dr. Howard Ward, of Southampton, to Elsie, third daughter of the late Arthur and Mary Nichols, of Melbourne, Australia.

DEATHS.

GRAY.—On Nov. 19th, at "Little Haven," Ealing, of heart failure, John Alfred Gray, M.B. Lond., in his 72nd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

NATIONAL BABY WEEK COUNCIL.

SOME CRITICAL ISSUES DISCUSSED.

AT a meeting of the Council held at Carnegie House on Nov. 20th, under the presidency of Mr. E. B. Turner, discussions on "A National Maternity Service" were based on issues arising out of the report of the Departmental Committee and the memorandum of the British Medical Association. Dr. T. Eustace Hill did not agree with the Association that the need for antenatal clinics would be reduced by the introduction of a satisfactory maternity service; if the clinics were suitably situated and equipped, and staffed by women medical officers, the demand would increase as the mothers became better informed. Miss E. M. Doubleday was of opinion that these clinics would tend to be rather in the nature of consultant centres, while Dr. J. W. Bone considered their principal function should be that of sorting patients into groups, and advising the women on such matters as general health and mothercraft. Dr. Hill and Miss Doubleday were in accord in believing that the Association's financial estimate of the scheme was far too low, and in the opinion that if a midwife was to be limited to about 100 cases a year a fee of £2 10s. a case would not provide an adequate income to attract the best type of woman. The first of the basic principles of the memorandum—"that the normal case can be safely treated at home"—was accepted by Dr. Bone and Miss Doubleday, but not by Dr. Hill, who felt there were many normal cases which required institutional treatment; he made light of the possible danger to the patients by aggregation in maternity institutions if these are "suitable so far as accommodation and staff are concerned."

Opinion was divided in regard to the proposal by the Departmental Committee to transfer the duties of inspection and the laying down of the training curriculum for midwives from the Central Midwives Board to the Ministry of Health. As a member of that committee, who had heard and read all the evidence, Dr. Hill said it had been made clear that inspection by the C.M.B. had been inadequate and perfunctory, while he himself had frequently been impressed by a tendency on the part of the Board in penal cases to show leniency which was not justified by the evidence laid before it by the local supervising authority. The C.M.B. as constituted was, he said, in no sense representative of midwives, and he was satisfied that not one per cent. of women would be deterred from entering the service because it was proposed to transfer certain minor duties to the Ministry of Health. Miss Doubleday, representing a group of midwives, agreed that the constitution of the C.M.B. needed amendment in order to make it more representative of the midwives of the country. They felt, however, that no profession could be controlled by a Government department and remain a profession, and that they ought to be governed, as the medical and nursing professions were, by an independent body. The vital point was that midwives should be supervised by people with a long practical experience of midwifery, and it was open to question whether a Government department could keep up to date in its knowledge of the professional side. The Departmental Committee's proposal amounted, it seemed, to leaving only the penal work in the hands of the Board.

THE FUTURE OF GREATER LONDON.

On Nov. 26th Mr. Arthur Greenwood, Minister of Health, accompanied by Earl Russell, Parliamentary Secretary of the Ministry of Transport, received a deputation from the Greater London Regional Planning Committee, under the chairmanship of Sir Banister Fletcher, P.R.I.B.A.

The first object of the deputation was to ask that the Government would take steps to check the evils of ribbon development on arterial roads, and it was suggested that these evils might be lessened by the following means: (1) purchase of the frontage lands by the State or the highway authority; (2) suitable agreements with the owners; (3) control of the lands adjacent to the road through town-planning schemes. A further question with which the committee had been concerned—the reservation of land for recreation grounds and other open spaces—was closely connected with that of ribbon development, since much the same difficulties arise with regard to the control over the land in question.

The committee were of opinion that these difficulties might be largely solved by amendments in the Town-planning Act, and they submitted a memorandum on the possibility of reserving a green belt around London, together with some specific suggestions for the amendment of the Town-planning Act, calculated to facilitate the reservation of land from buildings and the provision of open spaces, without imposing heavy burdens on the ratepayers. It was further suggested that additional town-planning powers should be given to county councils, which should be the authorities to acquire and hold regional open spaces, and that a body should be constituted for the Greater London area with power to prepare a master plan and scheme. This scheme should not, however, be carried beyond a provisional stage until those of the various town-planning authorities within the area were complete.

The Minister of Health said, in reply, that he was in full agreement with the general objects which the committee had set before themselves. The proposals for the reservation of open spaces and, in particular, of a green belt around London, were of great interest, though the methods to be adopted in practice would need careful examination. He was also interested in the suggestion that a special regional planning body should be constituted for the Greater London area, but he thought that local authorities would have to be consulted about this.

Lord Russell said that he fully sympathised with the views which the deputation had expressed upon the undesirability of ribbon development, from considerations both of economy and of traffic requirements. He could assure the deputation that the committee would have every support from the Minister of Transport in any practical scheme for mitigating the evil.

THE BUSCH OPTOMETER.

AT a meeting of the Optical Society, held at the Imperial College of Science and Technology, South Kensington, on Nov. 14th, Mr. A. G. Frewin, of the Emil Busch Optical Co., gave a demonstration of the Busch optometer, an instrument designed by Prof. Thorner for measuring refractive errors. By its means can be measured in diopters the hypermetropia or myopia of a symmetrical eye, or the ametropia in the two meridians of an astigmatic eye together with the directions of the meridians. The patient looks with one eye into the exit pupil of the instrument, while the observer looks into the eyepiece and focuses on the patient's macula the image of the straight filament of a small electric bulb. The focusing hand moves a scale relatively to a fixed pointer; when the side edges of the filament are sharp the ametropia may be read off at once. Freedom from glare and corneal reflections is secured by semi-circular stops which ensure that the illuminating rays are incident on the top half of the patient's cornea, whilst the light reflected from the fundus and reaching the observer issues from the lower half of the cornea. The vertex of the correcting lens is placed 12 mm. in front of the patient's cornea.

GLAXO MALTED FOOD.

IN recent articles upon the London Medical Exhibition we referred to a preparation supplied from the Glaxo Laboratories (56, Osnaburgh-street, London, N.W.) as Glaxo Malted Milk. It has been pointed out to us by the proprietors that the right name is Glaxo Malted Food, a cereal product for use as a supplementary when infants require something more than a milk diet. The preparation consists of malted barley and wheat flour, freed from bitter taste.

A HOSPITAL FORMULARY.

THE official formulary of eight Belfast hospitals has been printed and issued by the North Irish Pharmacists' Association of Belfast. It has been compiled with the consent and assistance of the medical staffs of the hospitals attached to the Belfast Medical School, and includes the prescriptions which are in common use in the out-patient departments and wards of the various hospitals. The formulary is divided into six sections beginning with general prescriptions and going on to those suitable for children, for gynæcological, throat, eye, and skin cases. Appended is a price list drawn up as a guide for hospital patients, the price of prescriptions (not including container) varying from 4*d.* to a maximum of 2*s.* 2*d.* In the addendum is a list of formulæ considered suitable alternatives to the more expensive preparations. The price of the Belfast Hospitals' Pharmacopœia is 2*s.* (plus postage), and copies may be had from any of the hospitals. Many old members of the medical school may desire to possess a copy.

DIFFUSION ANÆSTHESIA OF THE PERITONEAL CAVITY.

UNDER this heading we published last week a paragraph from our Vienna correspondent describing Dr. Mandel's experiments with percain as an abdominal anæsthetic. The Clayton Aniline Company, who supply this drug, inform us that the doses mentioned were too large. The amounted inserted in the peritoneal cavity should read "350 c.cm. of a ¼ per 1000, and in later cases 250 c.cm. of a ½ per 1000, solution of percain."

An Address

ON

INTRATHORACIC AND PULMONARY NEW GROWTHS.

*Delivered at the University of Sheffield on Dec. 3rd, 1929,**

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IN common with many of my colleagues I have been greatly impressed with the apparent increase during recent years in the number of cases of primary malignant disease of the lung which present themselves both in hospital and in private practice.

The appearance of cancer in the lungs in the form of secondary or metastatic deposits from tumours originating in other portions of the body is, of course, well known and calls for no special comment. The occurrence of primary growths in connexion with the lungs or bronchi has hitherto been regarded as a rarity. That the increased frequency of pulmonary carcinoma is real and not merely apparent is a fact of which I have not the slightest doubt. It has been borne in upon me by the clinical impressions of the last ten years and I know that a similar view is held by many competent observers who are in a position to form a judgment. Such a statement, however, demands at least some sort of proof, and I have, therefore, endeavoured to collect a few of the more reliable statistical observations to put forward as a basis for my contention.

A short reference to the literature of this subject may be useful, since it has now grown to such considerable dimensions. An admirable general account is given by Huguenin[1] in his recent book which includes an interesting résumé of the historical side. Of the principal authors in the last 50 years he quotes especially Fuchs and Pässler, who in 1896 collected together as many as 76 cases. In 1912, Adler[2] wrote a long treatise which has long been regarded as one of the classical sources of information. The names of Ménétrier[3] and Letulle[4] in France are specially mentioned as being always associated with the problem of pulmonary cancer. For a summary of the main pathological and statistical data reference may be made to Ewing[5] and for morbid histology to MacCallum's well-known text-book.[6] It is mainly since the war that the subject has come into great prominence, and most of the recent literature of importance is from Germany and America. Some of the most convincing evidence is summarised in Tables I. to III. and in the illustration.

TABLE I.—*Incidence of Pulmonary Cancer.*

(Figures quoted from Huguenin.)

Autopsies—number of.	Pulmonary cancer—cases of.	Author and dates.
11,400	40	Wolff.
21,000	17	Fuchs (1854 to 1896).
7,006	6	Norwiski (Lemberg) (1886 to 1903).
16,047	61	Lavrinovic (Petrograd) (1905 to 1914).

Compare with the above figures those of Berblinger (Jena) in regard to 8056 autopsies performed between 1910 and 1924. Of these 5773 were on persons over 20 years of age. Of the latter 987 had died of cancer (i.e., 17·1 per cent.). Forty-one of these cancers were primary growths of lung—i.e., 4·2 per cent. of all the cancers.

* Under the joint auspices of the Yorkshire Council of the British Empire Cancer Campaign and the Clinical Medical Studies Committee of the University of Sheffield.

Table I. giving some of the earlier statistics and Table III. giving later figures, are quoted by Huguenin, and so striking are the details that I have thought it well worth while to reproduce them. Table II. and the figure are taken from a very instructive paper by Hanf[7] whose figures are based entirely on post-

TABLE II.

Year.	Total autopsies.	Over age 20.	Cancer.		Cancer of the lung.						
			Total.	% of autopsies.	Total.	Male.	Female.	% of autopsies.	% of autopsies over 20 years of age.	% of cancers.	Average age.
1903	1272	944	80	6·3	3	2	1	0·2	0·3	3·7	62·3
1904	1408	948	95	6·7	4	3	1	0·3	0·4	4·2	67·7
1905	1328	959	135	10·2	1	1	—	0·08	0·1	0·7	74·0
1906	1324	941	113	8·5	5	5	—	0·4	0·5	4·4	54·0
1907	1364	843	150	11·0	6	6	—	0·4	0·7	4·0	55·3
1908	1356	762	112	8·3	4	3	1	0·3	0·5	3·6	61·5
1909	1480	671	141	9·5	6	6	—	0·4	0·9	4·3	61·5
1910	1422	688	136	9·6	10	9	1	0·7	1·5	7·3	54·0
1911	1419	763	139	9·8	9	7	2	0·6	1·2	6·5	54·7
1912	1431	768	134	9·4	6	3	3	0·4	0·8	4·5	49·7
1913	1348	731	203	15·3	6	3	3	0·4	0·8	3·0	49·8
1914	1257	692	170	13·5	8	6	2	0·6	1·2	4·7	47·6
1915	1042	657	154	14·8	8	8	—	0·8	1·2	5·2	60·4
1916	974	612	160	16·4	4	3	1	0·4	0·7	2·5	57·8
1917	1060	716	152	14·3	6	5	1	0·6	0·8	3·9	46·5
1918	1278	612	217	17·0	8	8	—	0·6	1·3	3·7	52·9
1919	1309	799	218	16·7	12	9	2(1?)	0·9	1·5	5·5	51·9
1920	1506	851	209	13·9	7	6	1	0·5	0·8	3·3	50·4
1921	1367	794	241	17·8	15	12	3	1·1	1·9	6·2	53·9
1922	1400	808	246	17·6	18	15	3	1·3	2·4	7·3	48·4
1923	1317	755	222	16·9	20	18	2	1·5	2·6	9·0	47·0
1924	1281	783	229	17·9	13	11	2	1·0	1·7	5·7	58·2
1925	1437	875	265	18·5	21	17	3(1?)	1·5	2·4	7·9	50·4

Statistics of cancer of the lung at the Charité Hospital, Berlin, from 1903 to 1925 (Dr. D. Hanf).

mortem records, as indeed are the Jena statistics and other recent observations. Hanf observes that an increase in lung cancer might be accounted for by fluctuations of the yearly post-mortems, or of the relative reduced post-mortems, and also by an increase in cancer generally. She seems to think that

TABLE III.—*Proportion of Lung Cancer to Total Cancer.*

(Showing Increase in Recent Years.)

		Per cent.		Total cancers.
Jena statistics	1910 to 1914	= 2·2	Pulm.	363
	1915 to 1919	= 2·9	,,	337
	1920 to 1924	= 8·3	,,	287
Basle (Staehelin)	Before 1906	= 1·76		
	1906 to 1914	= 2·9		
	1914 to 1924	= 5·0		
Berlin (Wahl)	1917 to 1922	= 6·0		
	1922 to 1927	= 13·0		
Zürich (Probst)	1906 to 1910	= 1·13		
	1911 to 1915	= 3·34		
	1916 to 1920	= 6·12		
	1921 to 1925	= 7·17		
	1926	= 7·56		

yearly fluctuations of post-mortems is an important point and remarks that very critical examination of figures is essential in this question. It appears, however, undeniable that the figures based on the percentage of total cancer cases have risen considerably and that this is definite evidence of the increase in lung cancer not only absolutely but relatively.

ÆTIOLOGY AND PATHOLOGY.

There are, so far as I can determine, no facts of which we are at present aware which would indicate to us definitely any peculiar ætiology in the case of pulmonary cancer as distinct from that of cancer generally. The average age of incidence appears to be round about 50, and all statistics agree that males suffer much more than females. As regards race, Huguenin points out that the condition is less frequent in coloured races than among whites, and quotes an

interesting observation by the chief of the Jewish Hospital in New York, who states that the number of cases of pulmonary cancer in his own clinic (that is, among Jews) is much greater than in other hospitals in that city.

I do not propose to attempt a detailed consideration of the morbid histology of these growths. It is sufficient for my present purpose to say that tumours of all descriptions are met with in the thorax, both benign and malignant. Of the benign growths, fibromata may be mentioned and together with these may be considered teratomata, dermoids, and some of the tumours of low malignancy such as chondro-sarcomata and myelomata. Of the malignant growths, the carcinomata are probably the most frequent, usually squamous-celled or columnar, though almost any histological variation may be found. Sarcoma is met with in younger subjects, and different varieties of endotheliomata are found at varying periods of life. I think it fair to mention Hodgkin's disease, or to use a more recent term lymphogranuloma, since, although it is not usually placed in the same pathological category with carcinoma or sarcoma, and whatever be its pathogenesis, in its clinical manifestations within the thorax it behaves very like a neoplasm.

A good deal of discussion has taken place as to the site of origin of the various growths found in the lungs and mediastinum, but I do not intend to enter into detail on this difficult question. Masses of growth which are found to invade the entire substance of a lung are often spoken of as primary carcinoma of the lung, but there is, I think, a general consensus of opinion that they originate primarily in the bronchial mucosa, and that the appearance of squamous-celled cancer in this situation may be explained by the occurrence of metaplasia.

It is mainly with the clinical side of this subject that I am concerned and with the problem that is presented to us at the bedside or in the consulting-room; my chief object is to summarise the important points in the differential diagnosis of these growths, and to give a practical account of the modern methods of investigation and treatment which represent the advances of the last few years.

Clinical Aspects.

The diagnosis of pulmonary or of mediastinal new growth is by no means always easy. Occasionally it is obvious; at other times we are confronted with a difficult problem, the solution of which involves a great deal of patient investigation and the employment of a combination of methods in a careful system of team-work. In drawing up a routine scheme for the complete investigation of a patient I should include the following points in order of sequence: (1) history and symptomatology; (2) physical examination of the chest; (3) radiographic examination by the usual methods; (4) radiographic examination in association with artificial pneumothorax, or with lipiodol injection, or both; (5) bronchoscopy; (6) thoracoscopy; (7) exploratory thoracotomy.

History and Symptomatology.

As in other diseases, a detailed history is of primary importance. The interpretation of symptoms and the estimation of their relative importance is, of course, a matter of clinical experience, but from the practical point of view I think that cases of intrathoracic growths may conveniently be classified into certain broad groups.

(*a*) Patients who present themselves in the first place with evidence of a *pleural effusion*. Sometimes this is the first and only manifestation of disease, the patient having had no previous trouble of which he was aware. As clinical experience has taught us that tuberculosis is by far the commonest cause of a sterile pleural effusion in a young adult, so I think in older persons the existence of a pleural effusion for which an infective cause cannot obviously be discovered should always raise the gravest suspicion of the presence of new growth within the chest, and if the fluid be uniformly blood-stained the suspicion may almost amount to a certainty. It has been stated by competent observers that the causes of sanguineous pleural effusions are the same as those of other pleural effusions and even that they may be due to tuberculosis, but to this I cannot subscribe, so far as my own experience goes. While it must be admitted that other causes must be sought for I am prepared to say that I have not seen a uniformly blood-stained pleural effusion which was not due to new growth.

(*b*) Patients who seek advice on account of *hæmoptysis*. Apart from the occurrence of hæmoptysis as a recognised incident in the clinical history of bronchial or pulmonary growths at any stage, there are numerous examples in which this has been the only initial symptom, and in any investigation of hæmoptysis of uncertain origin the question of growth must always be borne in mind. I have described interesting and difficult examples of this in THE LANCET and elsewhere.[8]

(*c*) Patients who are admitted for investigation whose history and physical examination suggest the presence of *localised infection* within the chest. In some of these diagnosis is extremely difficult. Both the physical signs and the radiological examination suggest the possible existence of an interlobar empyema or of a localised pulmonary abscess, and the suspicion as to the presence of pus is further increased by the state of the temperature chart, the character of the sputum, the increased leucocyte count, and the general toxic appearance of the patient. In some cases exploration has been carried out, and even where pus has been aspirated, the real cause of the toxæmia—viz., a breaking down neoplasm—has only been established post mortem.

(*d*) Finally, one has to consider those cases which do not fall into any of the foregoing three categories, but which comprise patients who seek advice for a variety of symptoms referable to the chest, but in whom the diagnosis is not obvious on ordinary clinical examination. It is of these especially that I wish to say a few words in connexion with the general symptomatology of thoracic neoplasms, and this for the reason that the frequency with which they have appeared in the ordinary routine of out-patient work at the Brompton Hospital has increased so amazingly in the last few years that some of us have come to regard with a certain instinctive preconception almost every bronchitic patient of middle age whose symptoms and general clinical condition appear to be incommensurate with the physical signs present on examination.

Of the various symptoms which are commonly present I am inclined to regard *dyspnœa* as the most important. While it is often aggravated by exertion, this is by no means always the case. Of the dyspnœa which accompanies new growths of the lung (apart from the presence of pleural effusion) I should say that its chief characteristics are its constancy, its tendency, especially in the later stages, to be paroxysmal in type, occurring at intervals without any apparent reason, and the fact that it is often out of all proportion to the extent of lung involved and consequently to the intensity of the physical signs. These are points in the history of the case on which stress may be laid when one is considering the differential diagnosis in a patient who has been treated for some common chest complaint and who has not responded to treatment.

Cough and expectoration are usually present, with occasional streaky hæmoptysis, but these symptoms do not as a rule differ much as regards their characteristics in new growth as compared with other diseases of the lung. The amount of sputum is largely a question of the extent to which the lung has been affected and has begun to break down in consequence of secondary sepsis. *Pain* is a variable symptom, and if the pleura is involved, may be very distressing, but on the whole my impression has been that in the majority of instances cancer of the lung, like cancer in other parts of the body, is in its earlier stages a relatively painless disease, although the incidence of pain must obviously depend largely on the site of the lesion and the extent to which it involves the sensory nerves. Severe pain due to erosion of bone and accompanied by other

evidences of pressure is more likely to be met with in growths of the mediastinum than in bronchial or pulmonary lesions. *General weakness* is usually complained of, but loss of weight, though of great importance in differential diagnosis, is by no means a constant symptom, and the general nutrition and healthy appearance of some patients who are known to have an intrathoracic growth is occasionally a remarkable feature. A point in the history which is worth noting is the frequency with which the patient will mention an attack of so-called influenza, from which he will often date the onset of his more obvious feeling of ill-health. I have mentioned the word influenza because this is the expression most commonly used by patients themselves, but occasionally there will be a history of pneumonia or possibly bronchitis. The explanation, I believe, is that in the very early stages pulmonary cancer is, like many other cancers, symptomless; at a certain period in the development of the disease the involvement of lung tissue results in a definite reaction of some sort within the body—in many cases owing to secondary infection—and this is interpreted in terms of its more superficial manifestations, the true underlying cause being unrecognised. I think that it is at this stage that the cardiac displacement seen so often in the radiographic appearances takes place; but this is a point of conjecture and one which it is difficult to establish.

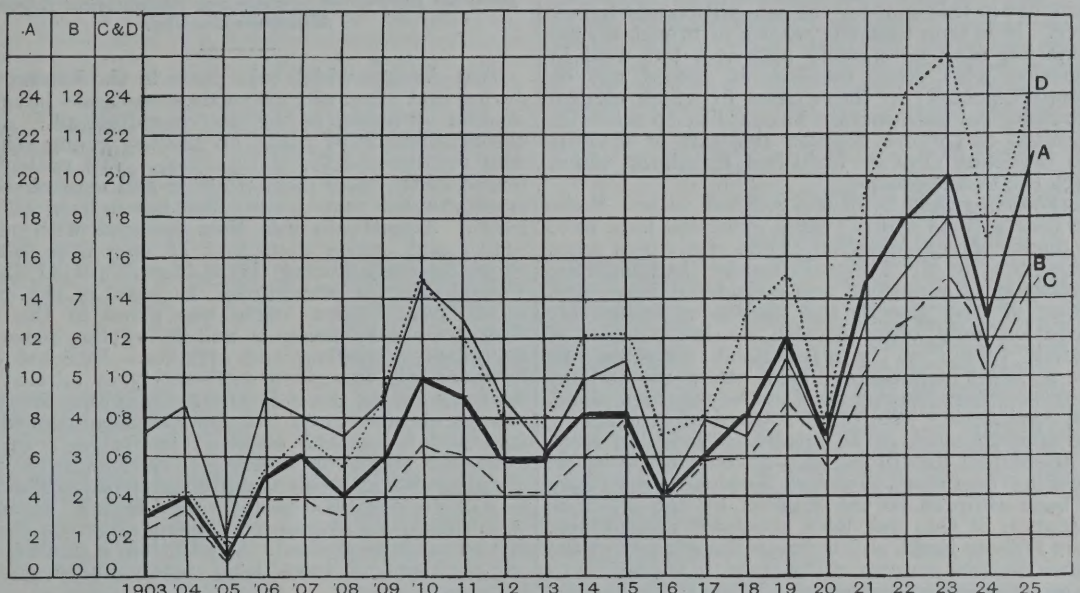

Chart showing incidence of pulmonary cancer at the Charité Hospital, Berlin, from 1903 to 1925. (D. Hanf: Virchows Archiv. f. Path.-Anat., 1927, cclxiv., 367.) A = Absolute figures for cancer of the lung. B = Percentage based on total cancer. C = Percentage based on post-mortem examinations on persons of all ages. D = Percentage based on post-mortem examinations on persons over 20 years of age.

Physical Signs.

The physical signs in the chest of necessity vary considerably according to the size and situation of the lesion, the same being true of the appearances seen in a radiogram. Growths in the mediastinum, like some aneurysms, may give rise to no appreciable signs on examination and may show an equally negative picture with X rays and diagnosis may not be possible until a later stage, when involvement of the recurrent laryngeal nerve may give rise to a typical abductor paralysis of one vocal cord, or pressure on other structures cause symptoms which reveal the real nature of the trouble. Where the growth bears a closer relation to the surface of the body, dullness to percussion is the most common sign, the degree of dullness depending on the size of the growth and the extent of lung and pleural involvement. In the case of a growth which has not spread far beyond the bronchus, quite definite dullness to percussion as well as opacity of the corresponding area in the skiagram may appear, owing to the relative atelectasis of that area of lung supplied by the obstructed division of the bronchus in question. I shall refer in a moment to some of the details of radiological examination, but it is convenient at this point to call attention to the early effects of bronchial obstruction upon both the clinical and radiological signs. Golden,[9] of New York, has shown in a series of radiological studies the development of bronchial carcinoma in two stages, a stage of invasion and a stage of bronchostenosis, the latter being characterised by bronchiectasis, infection, atelectasis, and pleural thickening, with or without fluid. According to his observations it seems that these changes probably occur in the order in which they have just been mentioned, and this is, I think, very much in accord with our own experience in this country.

Radiological Examination.

I now come to the radiological aspect of this matter, and although I do not want to say anything which might seem to lessen one's conception of the primary importance of accurate case-taking and methodical physical examination, I must emphasise the paramount importance of radiology in the differential diagnosis of such lesions as we are now considering. I have already indicated the variation which one may expect to find both in the symptomatology and in the physical signs, and the same is true of appearances presented to the radiologist. This once again emphasises the necessity of adequate coöperation between radiologist and clinician in the study of disease of the chest. Often radiographic examination alone is insufficient, and one has recourse both to the intratracheal injection of lipiodol and the introduction of air or oxygen into the pleural cavity as aids to radiological diagnosis.

I need not spend time in the discussion of the technical details of artificial pneumothorax induction of which a full description may be found in the late Dr. Riviere's admirable book.[10] The technique of lipiodol injection is simple enough, the main difficulty being due to the extreme viscidity of the oil. Burrell[11] uses a syringe with a screw piston and injects the lipiodol through the cricothyroid membrane. I myself have used the ordinary type of serum syringe and prefer injecting just below the cricoid into the

upper portion of the trachea. The introduction of the oil by means of a laryngeal syringe through the glottis may often be carried out satisfactorily, but it has the disadvantage of uncertainty, in that some patients cannot tolerate the procedure. Lipiodol injection will often give invaluable assistance not only in the diagnosis of growth in the chest but in the more accurate determination of the extent and position of the growth itself.

Bronchoscopy, Thoracoscopy, and Exploratory Thoracotomy.

Of bronchoscopy I would say that it is a means of examination, the possibilities and value of which have not received in this country the recognition which they deserve. It is true that the results of bronchoscopic examination may be entirely negative, but used in conjunction with other methods it should not be neglected, especially in those cases in which clinical and radiological examination have failed to establish a diagnosis and where definite evidence of stenosis of the bronchus may be furnished by direct vision through the bronchoscope.

Thoracoscopy may be of the greatest value. Some of the illustrations which I have exhibited here were made during the examination of one of my own cases at Brompton by Mr. Tudor Edwards[12] in which the cauterisation of adhesions was considered necessary. In cases of new growth the results of endoscopic examination may often furnish no information of diagnostic value; on the other hand, they may be of the greatest assistance. Like other methods of examination thoracoscopy must not be regarded alone, but in conjunction with other sources of evidence.

The final diagnosis of an intrathoracic lesion may, as in abdominal conditions, only be determined by an exploratory operation, although invaluable help may have been afforded to the surgeon by the previous examination if this has been carefully carried out. History repeats itself, and between the surgery of the abdomen and the surgery of the chest it is possible to make an interesting comparison. While at the present time one is bound to admit that the possibilities in regard to the treatment of intrathoracic neoplasms have considerable limitations, the successes of modern surgery in the removal of some of the less malignant forms have justified an attitude of determined expectancy. The use of radium in the treatment of pulmonary or mediastinal tumours, either alone or in combination with surgical measures, is to be encouraged, since no one can yet say the last word as to its possibilities or its limitations. I would deprecate very strongly the tendency to premature statements in respect of radium therapy, for I can conceive of no greater disservice to the public on the part of the medical profession than the broadcasting of optimistic encouragement which is not fully justified by scientific facts. The therapeutic aspect of intrathoracic and pulmonary new growths has indeed many disappointments, but I feel it no exaggeration to say that the advances of the last ten years have led those of us who are concerned with this work to regard it with some increase of confidence and with a vast amount of reasonable hope.

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AN ELECTROCARDIOGRAPHIC STUDY OF THE HUMAN HEART DURING AND AFTER NITROUS OXIDE ANÆSTHESIA.

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THE changes which take place in the human heart during and after nitrous oxide anæsthesia have been studied by means of the electrocardiograph. All the observations were made on healthy young students who volunteered for the purpose. The patient was placed in the recumbent position and control electrocardiographic curves were first taken from all three leads. Anæsthesia was then induced with nitrous oxide, and curves from lead II. only were taken at short intervals during the induction period and for several minutes afterwards. In most of the experiments pure nitrous oxide was given in the usual dental fashion, using a well-fitting face-piece connected to a gas-bag and cylinder. In some cases, however, air was given deliberately or inhaled accidentally during the induction. Deep anæsthesia was always obtained, and the gas was discontinued as a rule just before the onset of jactitation; in some instances slight or severe convulsions took place. Considerable cyanosis usually developed. The duration of the induction period varied from 47 seconds to 90 seconds, the average time being about 1 minute in the 16 subjects studied. In addition, a small number of observations have been made under gas and oxygen.

The results with pure nitrous oxide were as follows.

Stage of Induction.

1. *Rate of Heart.*—There is an acceleration at the commencement of the induction which is emotional in origin. A further increase in rate occurs as consciousness is lost, and the maximum heart-rate is observed when the anæsthesia is at its deepest. The final rates varied from 106 to 145 per minute.

2. *Auricular Complex.*—The behaviour of the P wave showed considerable variation in the different individuals. In most cases it was not appreciably affected. In a few subjects it increased markedly in height, the largest rise being from an initial value of 3·5 mm. to 6·5 mm. (Fig. 5). In one subject the P wave decreased from 5 to 3·5 mm. during the induction, while in another subject (who had shown at first augmentation of the wave) the P wave disappeared completely at the depth of the anæsthesia.

3. *P–R Interval.*—The P–R interval was surprisingly stable in our experiments. In only one case was it prolonged, and then did not exceed 0·2 seconds. In a few subjects there was slight shortening of the interval; this was most obvious in the subject with the longest initial interval.

4. *Ventricular Complex.*—The most striking and constant changes were noted in the T wave which was affected in all subjects. In every case a decrease in height was observed. In seven cases it was abolished completely or reduced to negligible dimensions (Fig. 1); in one subject the T wave was completely inverted (Fig. 2). In several instances the S wave was followed by a long iso-electric period which ended in a small positive deflection (Fig. 5).

The R wave was decreased in almost every case. The reduction in the size of R did not necessarily run parallel with the changes in T. Thus in Fig. 2 the T wave was abolished after 20 seconds' inhalation of nitrous oxide, but the R wave was only reduced from 29·5 to 27 mm. The largest reductions were of the order of 25 per cent.—e.g., from 21 to 16 mm., 25 to 20 mm., or 18 to 14 mm. In one instance an increase in the wave was obtained. Out of six subjects with a well-marked S wave, a reduction was noted in five—e.g., from 7 to 5·5 mm., or 5·5 to 4·5 mm.

Recovery Period.

Soon after the nitrous oxide is discontinued recovery sets in.

1. Reduction in the rate of the heart takes place very rapidly, as is clear from the subjoined table.

Subject.	Rate at end of anæsthesia.	Interval.	Rate at end of interval.
1	131	18 sec.	92
2	142	27 ,,	109
3	118	47 ,,	97
4	130	25 ,,	85
5	133	1 min.	80

After three or four minutes the rate is usually less than it was before the administration was commenced.

2. After air was given, the P wave underwent reduction in five subjects to less than its height in the control curves.

3. The P–R interval if it had been previously modified soon became normal. (Fig. 1, curve 4, however, shows slight shortening of the P–R interval after administration of air.)

4. In three subjects the R wave was further definitely decreased. Thus in subject Ro. the initial height of the wave was 21·5 mm., at the depth of anæsthesia 17·5 mm., and after breathing air for 25 seconds it was 14·5 mm. In nine subjects the R wave had not completely recovered at periods of four to eight minutes after the anæsthetic was discontinued—e.g., initial height 28 mm., at depth of anæsthesia 18 mm., 6 minutes 25 seconds later 23 mm. In two cases the R wave finally definitely exceeded its level in the control curves (Fig. 2, curve 5).

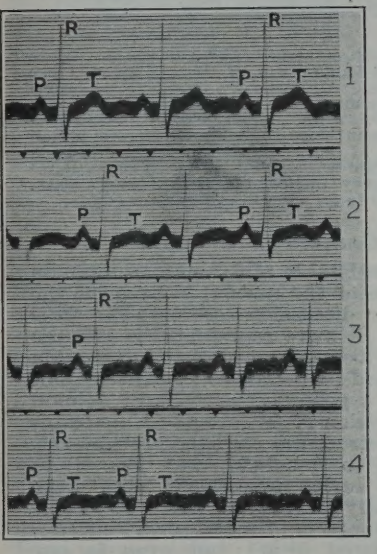
5. The T wave invariably began to return as soon as air was given. The recovery may be obvious after 15 seconds or less. Complete recovery took place in all but two subjects, the shortest time taken being 67 seconds. In two cases the T wave finally exceeded its height in the control curves (Fig. 2, curve 5).

Discussion.

These results show that striking functional changes take place in the heart during the inhalation of pure nitrous oxide. There is marked tachycardia; the auricle shows variable changes, but conduction in the bundle of His is but little altered. When pure nitrous oxide is breathed, oxygen is washed out from the alveolar air and from the blood, so that an extremely severe anoxæmia is acutely produced, as is indicated by the development of cyanosis. Some decrease in the alveolar and arterial CO_2 probably takes place too, owing to the hyperpnœa which often occurs. The changes in the heart illustrated in the electrocardiographic curves might be due to the direct action of the nitrous oxide or they might be secondary to the accompanying anoxæmia.

This problem can be decided to a considerable extent by comparing the electrocardiographic changes under pure gas with those under gas combined with sufficient oxygen to prevent anoxæmia. Fig. 3 shows that in the subject Ro. after 25 seconds' inhalation of pure gas, the T wave was abolished, the R wave reduced from 21·5 to 16·5 mm., and the rate increased from 90 to 124 per minute. At 53

FIG. 1.



Subject B. In this and the other figures all records are from lead II; the time is shown in 1/5th secs. and the height of waves in curves in mm. (1 millivolt = 1 cm. on original records). Pure N_2O inhaled for 47 secs. During administration, heart-rate increased from 94 to 133 per min. T wave abolished after 37 secs.; R wave decreased. After administration heart-rate rapidly returned to below its original level. Recovery in T wave noticeable after breathing air for 15 secs. But after 2 min. (not illustrated), neither T nor R has fully recovered.

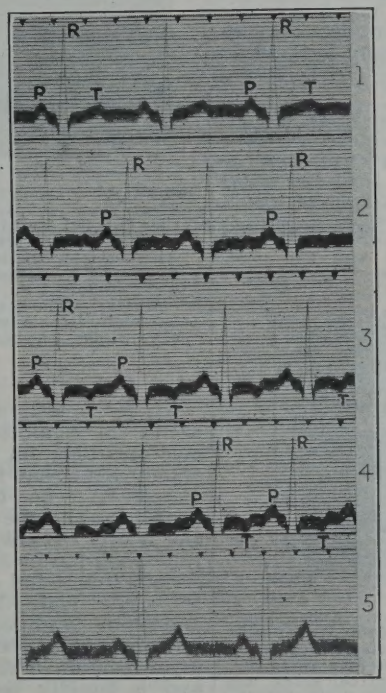
Curve 1 is a control curve taken before anæsthesia. Rate 94 per min. P 5+. R 25. T 6+. S 7. Induction with pure nitrous oxide commenced at 0 min. 0 sec.

Curve 2.—After 20 secs. Rate 120 per min. P 5+, 6. R 19, 20. S 4, 6. T almost abolished.

Curve 3.—After 37 secs. Rate 133 per min. P 5, 5+. R 19, 22. S 4, 6 (8). T abolished. Anæsthetic discontinued at 47 secs.

Curve 4.—After 1 min. 2 secs. (after 15 secs. air). Rate 104 per min. P 5, 5+. R 18, 20. S 5, 6. T just returning. P–R interval *decreased* slightly.

FIG. 2.



Subject G. Pure N_2O administered for 90 secs. During the administration the heart-rate increased from 90 to 124 per min. After 20 secs. the T wave was abolished. After 45 secs. T was definitely inverted; P–R interval was unchanged. Following administration the rate decreased to 77 per min. The T wave became upright again. Finally both R and T exceeded their amplitude in the control curve. The string was carefully restandardised before curve 5 was taken.

Curve 1.—Control curve taken before anæsthetic. Rate 90 per min. P 5½. R 29, 30. T 4, 5. S 2, 3. Induction with pure nitrous oxide commenced at 0 min. 0 sec.

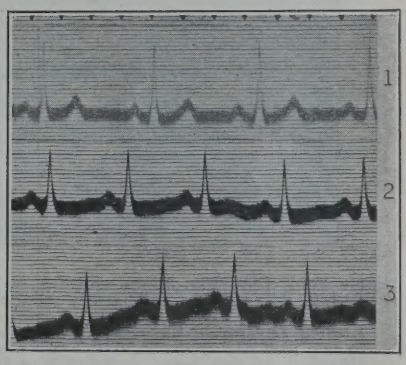
Curve 2.—After 20 secs. Rate 108 per min. P 5½, 6. R 26, 28. S 2, 3. T abolished; long iso-electric period after S terminating in deflection which is first diphasic and then negative.

Curve 3.—After 45 secs. Rate 116 per min. P 5½, 6. R 27, 29. S 3, 4. T inverted. P–R interval unaltered.

Curve 4. After 1 min. 30 secs. Anæsthetic discontinued. Rate 124 per min. P 5, 6. R 28. T inverted. P–R interval unaltered.

Curve 5.—After 6 min. 40 secs. Rate 77 per min. P 5½, R over 30. T 7, 8.

FIG. 3.



Subject Ro. Pure N_2O inhaled for 53 secs. During administration the heart-rate increased from 90 to 130 per min. The T wave was abolished after 25 secs. The R wave decreased from an average value of 21·5 mm. to 17·5 mm. After administration further reduction in the height of the R wave to 14·5 mm. occurred. After 25 secs. breathing air the rate had fallen to 85 per min. and considerable recovery of T had taken place. In this subject after 4 min. 15 secs. R and T had not fully recovered.

Curve 1.—Control curve before anæsthetic. Rate 90 per min. P 5. R 21, 22. T 6½, 7. Induction with pure nitrous oxide begun at 0 min. 0 sec.

Curve 2.—After 25 secs. Rate 124 per min P 5, 6. R 16, 17. T trace or abolished.

Curve 3.—After 53 secs. Anæsthetic discontinued. Rate 130 per min. P 6. R 17, 18. T absent at first, then recovery commenced.

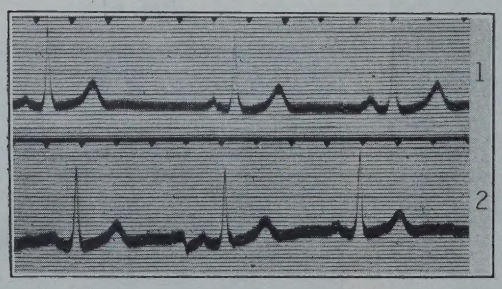
seconds the anæsthetic was removed; the pulse-rate was 130, the T wave was absent at first and then showed commencing recovery, and the R waves averaged 17·5 mm. At 68 seconds (25 seconds later) the T wave had recovered to 5 mm., though further decrease in the R (to 14·5 mm.) had occurred. Fig. 4 shows the effects of gas combined with adequate amounts of oxygen. After 4 minutes 15 seconds anæsthesia was present and the conjunctival reflex was lost; the pulse-rate, however, was only 73 per minute and the ventricular complex was not markedly different from that noted in the control curves.

Schneider and Truesdell[1] produced acute anoxæmia in normal subjects by inhalation of nitrogen for periods of 47 to 112 seconds (average 82 seconds). None of their subjects completely lost consciousness, though in some cases twitching was noted. The pulse-rate was found to increase from an initial level of 95 per minute to a final value of 120 per minute. When air was again breathed the pulse-rate returned to normal or below normal in 40 seconds. It seems justifiable to conclude that the tachycardia observed under pure nitrous oxide anæsthesia is wholly due to the accompanying anoxæmia.

Greene and Gilbert[2] observed changes in the T wave (similar to those noted by us) in chronic anoxæmia in man. In their experiments the oxygen-content of the inspired air was gradually lowered so that after 20 to 30 minutes a final value of 5 to 10 per cent. was reached.

Some reduction in the height of the T wave may occur during simple emotional tachycardia. In our experience the extent of such reduction for an increase in heart-rate of about 30 per minute is of the order of 1 to 3 mm. only.* The marked reduction, abolition or inversion of the T wave which we have described

FIG. 4.



Same subject as Fig. 3. on another occasion. Curve 1 is a control curve taken before anæsthetic. Rate 57 per min. P 4, 5. R 20, 21. T 7½, 8. Gas and oxygen were given for 4 mins. 15 secs., in the proportions of about four parts N_2O to one part O_2 approximately: the conjunctival reflex was absent. At this point curve 2 was taken. Note that the heart-rate was only 72 per min. and that little decrease in the height of R or T had occurred. (P 4, 4½. R 20, 22. T 6, 7.) Compare with Fig. 3.

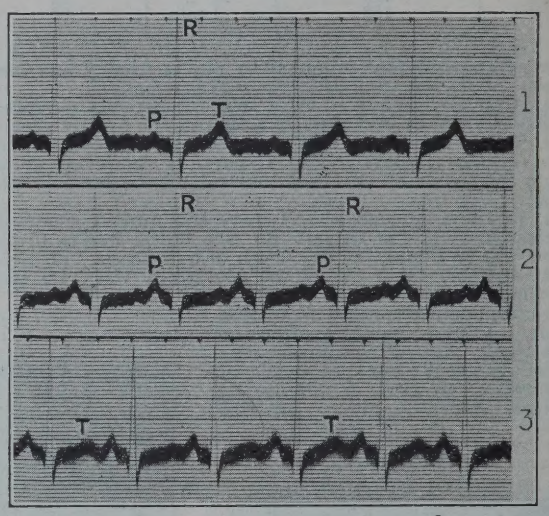
must be mainly due to the anoxæmia affecting the heart otherwise than through simple acceleration. This view is confirmed by the record shown in Fig. 5, which shows the effect of accidental inhalation of a breath of air during the induction period. The heart-rate is 124 per minute in Fig. 5 (curve 2), compared with 120 per minute in Fig. 5 (curve 3) after the air was breathed. Although the tachycardia persisted, immediate partial recovery of the T wave is noted in Fig. 5 (curve 3) which is presumably due to the beneficial effects of the oxygen breathed.

The cause of the changes in the R wave is not so clear. Marked decrease in the R wave usually occurs during pure nitrous oxide anæsthesia, and is absent with gas and oxygen. It must be pointed out, however, that further decrease in the height of the R wave may take place after air is administered.

* Compare, for example, the height of the T waves in the control curves of Figs. 3 and 4, in which the pulse-rates in one subject were 90 and 57 per minute respectively.

Lewis and Mathison[3] observed heart-block from acute anoxæmia in the cat. In their experiments the heart-block developed after a latent period of 1½ to 4½ minutes. The absence of heart-block in our experiments may have been due to the shorter duration of the anoxæmia.

FIG. 5.



Subject S. 1 is control curve taken before anæsthetic. Rate 82 per min. P 3, 4. R 34, 35. S 5, 6. T 7. Pure N_2O was then inhaled for 55 secs. After 20 secs. (curve 2) the heart-rate increased to 124 per min. The P was 6·5 mm. compared with 3·5 mm. originally. T was abolished and replaced by a small positive deflection at the end of a long iso-electric period which followed S. At 37 secs. a breath of air was inhaled (curve 3). The heart-rate was scarcely altered (120 per min.) but considerable recovery in T immediate y took place. (T variable in height up to 5.) P still exaggerated, 6½, 7.

Conclusion.

There is still considerable difference of opinion about the significance of the normal T wave of the electrocardiogram (for discussion see Katz[4]). It is widely held that the T wave represents the "stage of retreat"—i.e., the disappearance of the excitation process at the apex and its persistence at the base of the heart. There is a general consensus of opinion that abolition or inversion of T in lead II. indicates serious functional or structural cardiac derangement. It seems justifiable to conclude that the acute anoxæmia produced during anæsthesia with pure nitrous oxide seriously depresses the ventricular myocardium. The change is of a temporary nature, and is rapidly recovered from; but even in our healthy subjects recovery was sometimes not complete after several minutes. It is possible that in patients with heart disease the immediate changes might be of a more serious nature, and it is conceivable, too, that they might be of a more lasting character. It suggests that pains should be taken in such patients to avoid any anoxæmia developing by giving adequate amounts of air or oxygen in combina-tion with nitrous oxide.

Summary.

The changes in the human heart during pure nitrous oxide anæsthesia have been studied electrocardiographically in 16 subjects. The principal results obtained were (1) tachycardia; (2) reduction, abolition, or inversion of the T wave in lead II.; (3) reduction in the R wave; (4) variable changes in the P wave; (5) little change in the P–R interval. The tachycardia and modifications in the T wave are attributed to the accompanying anoxæmia. The practical implications of these findings are discussed.

We are indebted to Drs. Anderson, Gray, Rose, and Slaughter for help with the administration of the

anæsthetics, and to the students of the hospital who kindly offered themselves as subjects for this work.

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ASTHMA IN CHILDREN.

THE VALUE OF SUGAR IN ITS PREVENTION AND TREATMENT.

WITH A NOTE ON THE TREATMENT OF INFANTILE ECZEMA.

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(*From the Department for Medical Investigations, Queen Mary's Hospital*).

IN a previous paper[1] attention was drawn to the importance of ensuring an adequate supply of sugar, in any form, in the diet of children, and it was shown how readily many of the minor symptoms of disordered health in children can be cured and prevented by this simple measure. It was pointed out, too, that amongst the disorders which apparently yielded quite readily to this treatment were some cases of asthma. The object of the present paper is to record four cases of typical bronchial asthma in children who have been rendered entirely free from attacks over periods of one to two and a half years by the simple addition of sugar to the diet and without any other form of treatment. During the past six years other cases have been treated in the same manner, with success varying chiefly with the care and persistency with which the treatment has been supervised by the parents, though it is not to be expected that all cases will respond so favourably as the four described below.

Rackemann[2] has shown that asthma in children is often completely controlled by careful attention to the hygienic conditions under which the child lives, but in the cases considered here an increased allowance of sugar in the diet was the only alteration made in the daily life of the child. All the patients were treated at home by the parents, and were seen regularly in the out-patients' department at fortnightly intervals. The treatment simply consisted in giving three drachms of powdered glucose in lemonade three times a day, in between meals, with extra sugar and "sweets" as recommended in the paper referred to above[1] for debilitated children. In each case this treatment resulted in a marked improvement in the general health and spirits, in addition to the complete disappearance of the asthma. No evidence has been obtained as to the mode of action of sugar in these cases, but I am inclined to attribute its beneficial effects to the improvement in the general health. Barber and Oriel,[3] however, consider that in these cases there is some hepatic dysfunction, and that sugar exerts its beneficial action on the liver.

CASE 1.—A boy, aged 8 years, had suffered from bronchial asthma since he was 3 years of age. Up till then he had been in normal health. The attacks apparently dated from whooping-cough contracted at the age of 3. The attacks generally occurred at monthly intervals throughout the year, and lasted for two or three days. He was an only child, small, pale, thin, and delicate-looking, but bright and intelligent, sometimes, but not habitually, constipated. His tonsils and adenoids had been removed at 4½ years of age. There was no family history of asthma or eczema. At the age of 5 he began to have typical attacks of cyclical vomiting with the usual pyrexia. These attacks occurred at about monthly intervals but did not coincide with the attacks of asthma or bear any apparent relation to the latter, though on two occasions the history of the symptoms suggests that the asthma was preceded by symptoms of cyclical vomiting—viz., pyrexia, headache, and vomiting.

Treatment was commenced in August, 1926, and he was given three drachms of glucose thrice daily, with extra sugar at meals, and sweets. Until December, 1928, he had no further attacks of asthma. For the previous 12 months he had ceased to attend hospital, and he admitted that he had recently not been having his usual allowance of sugar; as a result, he had a single attack of asthma. The treatment was resumed and since then, until he was last seen in August, 1929, he had had no more asthma or cyclical vomiting. This boy has therefore had only one attack of asthma during the past three years.

CASE 2.—A boy of 8, the elder of two children, was thin, small for his age (weighing 40 lb. 4 oz.), and very nervous. He looked a good colour and was not constipated. The family history as regards asthma was unreliable. He had never suffered from cyclical vomiting. At the age of four months he had had "eczema," and at two and a half years pneumonia. The attacks of asthma had begun at the age of 5, and had occurred at intervals of 14 to 21 days. They began with a cough which was succeeded by difficulty in breathing, and generally started at about 2 A.M., and lasted for 48 hours.

Treatment was commenced on August 16th, 1928, and was followed by a most remarkable improvement in appearance and physique, and he has since (up to June, 1929) had no further attacks of asthma.

CASE 3.—A boy, aged 4 years, was an only child, with a pale face and a flabby and watery body. He was first seen on March 9th, 1927, when he was 2½ years old. There was no family history of asthma or eczema. He had had bronchitis and pneumonia in the previous winter. He was always constipated. When seen he was in a typical attack of bronchial asthma; there was marked prolongation of the expiratory phase and the chest was full of sibilant râles and rhonchi. For the previous nine months he had been having similar attacks at intervals of three weeks.

Treatment was commenced as in the previous cases. A week later he was much better and was able to go out of doors. He has attended hospital since at fortnightly intervals and had had no further attacks of asthma by June 6th, 1929—that is, for a period of two years and three months.

CASE 4.—A boy, aged 4½ years, whose maternal grandmother had suffered from asthma, was an only child, well built, and healthy looking. For the past three years he had suffered from attacks of cough and shortness of breath, mostly commencing during the night, and occurring every two or three weeks, both winter and summer. In some of the attacks he had headaches and vomited, and was said to be feverish. His weight was 2 st. 12 lb. 4 oz.

Treatment with sugar was begun on Feb. 18th, 1928. No further attacks occurred until Dec. 1st, when he had a mild attack. Examination of the urine showed excess of acetone bodies, suggesting that he was for some reason not having sufficient sugar. Renewed instructions as to the importance of treatment were given, and no further attacks have been experienced.

From a consideration of these cases it seems that an increased allowance of sugar, as such (i.e., not as starchy foods), in the diet alone was sufficient to prevent recurrence of asthma in these four children over a considerable period of time. The result justifies the hope that a simple and effective cure and preventive measure has been found for this distressing disorder, at least in some cases. Unfortunately, so far as my experience goes, sugar is without value in the treatment of asthma in adults.

It is not possible to lay down more precise rules for the exact amount of sugar required in a given case. In general it may be said that that amount—ascertained by trial—must be given which will ensure that the urine does not contain an excess of acetone bodies (positive Rothera reaction) under any conditions of stress—i.e., worry, excitement, or infection. In practice, this would generally seem to be met by the doses given in the cases here recorded. The administration of alkalis in these cases does not appear to enhance the action of the sugar in any way.

Sugar in the Treatment of Infantile Eczema.

In view of the supposed connexion between eczema and asthma in children, it is of interest to note that, quite contrary to the usual teaching, sugar also appears to be of some value in the treatment of infantile eczema. This is so subject to spontaneous recovery and remissions that little would be gained

by a detailed account of the individual cases treated, but it may be stated that in seven cases of severe infantile eczema, one involving the whole of the head, face, and trunk, glucose added to the feeds or given in lemonade was the only form of treatment employed. No other alteration in the diet was made and in none of the cases was there any local application to the skin, which, where necessary, was covered with changes of dry sterilised lint, lightly bandaged on. Bathing was forbidden. The first result noted was a drying-up of the weeping areas, and this was followed by dropping-off of the scales. None of these cases have been under observation for a sufficient length of time to determine whether or not this therapeutic measure is of any prophylactic value for recurrences of eczema. Nor is it suggested that this procedure gives better results than recognised methods for the treatment of this condition, though it may be of value in some cases in addition to the usual local measures.

These observations form part of an investigation on subnormal children carried out with the aid of a grant from the Medical Research Council.

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EMOTION AND ACUTE GLAUCOMA.

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FOR many years ophthalmologists have accepted emotion as an exciting cause of acute glaucoma. My own experience has suggested that even though conscious emotion may not be present, at any rate in a sufficient degree to account for the attack of glaucoma, nevertheless the onset may coincide with the anniversary of events once pregnant with emotion but now apparently indifferent or even long since forgotten. The psychological investigation of such cases might lead to a further knowledge of the mechanisms involved, and so enable us sometimes to prevent the development of this very serious and painful disease by providing for the discharge of the emotion through legitimate paths.

I was recently called in to see a retired medical man, aged 77, who had developed acute glaucoma in the left eye the night before. This at first sight seemed to be a case unassociated with any emotional experience. The patient said that he had had no upset on the previous day. He had gone to bed at 10 o'clock and a quarter of an hour later the attack had begun. But I was suspicious. Experience had made me wary of accepting such evidence, and I remarked to the doctor in charge, who knew of my researches, "This is probably a case of periodicity." The patient did not understand the drift of my remark, but his son, who was unusually intuitive, said that he thought he could shed some light on the attack. "Yesterday," he said, "was my birthday, and my father, who has felt recently that he would not live much longer, spent some time last evening in discussing my future after his death." Father and son were living together alone, and the bond between them was very close. The former declared that he had not been worried by the thought of death, but it was clear that he was much concerned about his son's welfare, and had chosen the birthday as the appropriate occasion for the contemplation of the most momentous event which can happen to anyone after birth. There were other matters in the conversation which might have been expected to evoke emotion from the patient, notably that several members of the family had died suddenly, the eldest and last surviving sister having done so at the age of 77. The patient, having now attained this age, thought that he too might die suddenly and wished to assure himself of his Benjamin's happiness before departing.

The patient's nervous state was shown during the operation by great restlessness, although he felt no pain. I intentionally refrained from keeping the other eye under eserine, but no further symptoms arose until two days later, when glaucoma developed. I was anxious not to operate until the left eye was safe, so reassured him, and instilled eserine. Within a few hours the symptoms of glaucoma had disappeared, and they never recurred, though he had no further treatment. A fortnight later it was decided to see what effect dilatation of the pupil would have in order to settle whether a prophylactic trephining should be done. Accordingly, homatropine was instilled after the eye had been carefully examined for any signs of past or present glaucoma. The pupil became dilated until the iris was almost invisible, but the tension remained normal and has done so up to the present, the next anniversary producing no recurrence of the disease.

Thus, in this case at any rate, some factor other than mere mechanical dilatation of the pupil must be invoked to explain why he got glaucoma in the right eye, and it is that factor which needs the most careful investigation. That it frequently depends upon some emotional disturbance is, as I have said, commonly admitted. The circumstances of the onset in the patient's left eye suggest that an attack may replace an emotion, for the strange part of the story is that the father was perfectly calm during the talk with his son and was not conscious of any mental disturbance. The son assured me that it was the custom to talk freely about possible deaths in the family. It had been so during the mother's fatal illness some years previously, and she had then serenely made detailed arrangements with her family for her burial. If, then, the patient felt no ill-effects from the conversation, can we conclude that there was any connexion between it and the ensuing glaucoma? Like all medical questions involving proof, this is difficult to answer. One case does not establish a rule, and the application of statistical methods in psychological investigation is by no means easy.

Space does not permit me to give details of the 20 consecutive cases which have been followed out, but the most striking feature has been the absence of conscious mental stress sufficient to account for the acute attack. Only two followed soon after a death in the family, and the interval in each case was sufficiently long to have allowed the patient's grief to be tempered by time. Indeed, in a long experience, I can call to mind only one instance where acute glaucoma followed immediately upon a death in the family. This was the case of a man who developed the disease whilst returning from the funeral of his mother.

In attempting to explain these strange phenomena, which, as I hope to show in future papers, could be multiplied indefinitely for eye diseases in general, one naturally turns for enlightenment to any psychological theory which might fit in with the facts, and it is with something of a shock that one remembers the emphasis laid by Freud upon the legend of Œdipus, who blinded himself in expiation of his unwitting offences against his parents. It is possible that research will reveal more and more the profound influence of complexes in the determination of organic as well as functional illness. The first case I investigated got acute glaucoma the day before the anniversary of her mother's death 47 years before—a date which she had completely forgotten—and had a recurrence of the symptoms, without actual increase of tension, on her own birthday six months later. Another woman developed an attack on her birthday, while yet another became glaucomatous while fretting over a slight chill which might have prevented her attending her mother's birthday party on the morrow. One man, aged 58, burst into tears when asked about his mother's death, which had occurred within a day or two of the date of his attack of acute glaucoma but with an interval of 48 years.

These patients, amongst others, certainly seem to have lost their sight temporarily in connexion with intimate family relationships of many years' standing. The latter are not consciously of such a nature as ordinarily to produce serious illness, and one must presume the working of an unconscious mental mechanism, unless the associations now recorded are to be attributed to pure coincidence. If the former, then the ophthalmologist must seek the aid of a skilled psychopathologist to arrive at a further

elucidation of the problem, for direct questioning may be valueless. There must be many cases of acute glaucoma in which the mechanism necessary for the attack has been set in motion by stimuli other than the recurrence of a certain date. The latter has merely been used as a convenient formula for the purpose of investigation in old people who could not be subjected to direct analysis.

Clinical and Laboratory Notes.

A CASE OF KIENBÖCK'S DISEASE.

ULTIMATE RECOVERY WITHOUT OPERATIVE TREATMENT.

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Several cases of this somewhat rare condition of traumatic osteoporosis of the carpal semilunar have been described recently.[1] The present case is considered worthy of record, in view of the almost perfect functional recovery after an interval of four years without operative treatment.

The patient, a crane-driver aged 33, who used his right hand to manipulate switches and brakes, was admitted to the Middlesex Hospital on July 20th, 1925, having fallen 30 feet from his crane. The diagnosis made was "compound fracture of left tibia and fibula; 'sprain' of right wrist." The pain in the wrist quickly subsided until after his discharge three months later, when he was using crutches. It then increased gradually, and was severe by March, 1926, when there was swelling and tenderness on the dorsum of the wrist and limitation of all movements. X ray examination showed patches of rarefaction and increased density in the semilunar bone.

Massage and movements were ordered, but caused no improvement. In August, 1926, the wrist was put up in plaster in dorsiflexion for three weeks, followed by massage and radiant heat; this brought about a slight improvement. In October the pain was greatest when at rest, and a cock-up splint was ordered for wear at night. In November an X ray showed some increase of the areas of rarefaction at the expense of those of increased density. In February, 1927, there was still considerable limitation of movement and X rays showed no further changes. In March the hand was manipulated under an anæsthetic; the utmost movement obtained was flexion 45°, extension 35°, adduction 30°, and abduction 0. By September there had been little change. X rays showed the areas of rarefaction now predominating. In December movement and power were limited by 50 per cent.; he could not carry a bucket of water without pain. There was swelling and tenderness over the centre of the dorsum of the wrist and an increase in the antero-posterior diameter, but no crepitation on movement. Pain in the wrist was caused by percussing the heads of the third and fourth metacarpals.

In August, 1929, he had almost completely recovered power, and could lift heavy weights with only occasional pain. He obtained a flexion of 60°, an extension of 45°, an adduction of 45°, and an abduction of 20°, and there was no tenderness, though antero-posterior thickening remained. The X ray showed mainly an increased density of the semilunar, with no arthritic changes in the carpus.

Comments.

This condition was first described by Peste in 1843; in 1910 Kienböck collected 36 cases, and his name has since been associated with the disease.[2] A similar condition of the carpal scaphoid is known as Preiser's disease, and various combinations of carpal bones may be affected, including the os magnum and unciform, as well as the semilunar and scaphoid. Buchman has described seven such multiple cases.[3]

Of Kienböck's 36 cases, 31 were males; in 24 the right wrist was affected, and 23 were between the ages of 17 and 39 years. These proportions are borne out by other observers; Goldsmith states that males are affected seven times as often as females, and the right wrist two and one-half times as often as the left, and that the commonest age of incidence is in the third or fourth decade.[4] Most observers agree that the condition follows trauma, either a single severe pressure insult or repeated small injuries, such as are received in some occupations. Müller describes in addition an anatomical type due to abnormal pressure lines from anatomical anomalies, but this has not been universally accepted. In the present case occupational trauma was present, but the onset was determined by a single violent injury.

There is, as in this case, an initial acute stage lasting for some weeks, with swelling, pain, and tenderness over the semilunar, and limitation of movement. This is followed by an interval of comparative freedom from symptoms, lasting possibly for several months. Increasing disability then becomes manifest, with swelling and tenderness, and the patient is left with a permanent moderate degree of disability.

In addition to the swelling and tenderness over the semilunar and limitation of movement, two "pathognomonic" signs have been described by Finsterer.[5] These are loss of prominence of the third knuckle, due to compression of the semilunar in its vertical axis, and pain in the semilunar on percussing the head of the third metacarpal. This latter sign is present also in some cases of fracture of the carpal bones, and the amount of radial or ulnar deviation of the hand determines which metacarpal must be percussed to give the maximum pain. Radiographic signs are usually negative in the first stage. Subsequently, areas of rarefaction and areas of increased density appear; the bone tends to be compressed vertically and widened antero-posteriorly. The proximal part is usually involved first, and may become fragmented; it is held by some that a fine line of fracture can be seen in cases examined early.

Pathology.

Examination of an excised bone shows that it contains cysts, with loose and dense fibrous tissue invading it. Various theories have been advanced to account for the condition; they may be summarised as follows:—

(*a*) *Those assuming the presence of a fracture.*—(1) Localised osteitis fibrosa in the region of a fracture (Wollenberg). (2) Defective regenerative ability of the carpus (Baum). (3) Aseptic primary bone necrosis with a pathological fracture (Axhausen).

(*b*) *With no assumption of fracture.*—(4) Injury to blood-vessels, due to tearing of the dorsal and lateral ligaments following a momentary dislocation, and followed by rarefaction (Preiser). That this is probably incorrect was pointed out by Ogilvie when showing a case recently at the Medical Society of London; he had followed up cases of dislocated semilunar which were reduced, and none had developed Kienböck's disease. (5) Abnormal pressure due to anatomical anomalies (Müller). (6) Degeneration (Destot). (7) Infection (Fontaine). (8) Leriche assumes that there can be no rarefaction without hyperæmia, and suggests a traumatic axone reflex, the sequence being trauma, vaso-constriction, vaso-dilatation, bone absorption.

In considering the possibility of an initial fracture, it must be remembered that fracture of the semilunar bone alone is very rare; Goldsmith reports only 14 cases in 13,143 fractures of all bones, or 0·1 per cent.[6] It is also difficult to conceive of any mechanism by which the semilunar alone can sustain a "crush" fracture without injury to other carpal bones.

The condition cannot be regarded as similar to Schlatter's disease, pseudo-coxalgia, or Köhler's disease of the tarsal scaphoid, all of which occur in the growth period. Henderson suggests Kümmell's disease of the spine as the nearest analogy.[7]

Prognosis for complete cure is not good; osteo-arthritis may develop as a sequela.

Treatment.

Treatment may be non-operative or operative. Rest is indicated in the acute stage, preferably in plaster. Massage, active and passive movements, and radiant heat may help to restore function, and manipulation under anæsthesia may increase the range of movement. Operative treatment consists in excision of the semilunar; no guarantee, however, can be given of complete restoration of function. Müller has reported one case cured by complete extirpation of all bone debris, leaving behind a shell of bone.[8] Ogilvie, at the Orthopædic Section of the Royal Society of Medicine, recently showed two cases in which perfect function followed removal of the semilunar bone, while Fairbank showed a case in which this operation was followed by no improvement.

I am indebted to Mr. Turner Warwick for permission to describe the case, and to Dr. F. G. Nicholas for the skiagrams.

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A CASE OF MENINGO-ENCEPHALITIS FOLLOWING GERMAN MEASLES.

BY J. H. E. BROCK, M.D. LOND., F.R.C.S. ENG., D.P.H.,

LATE HONORARY PHYSICIAN TO THE WESTMINSTER GENERAL DISPENSARY.

WHILE cases of encephalitis have been recorded from time to time following measles, variola, vaccinia, herpes, pneumonia, and typhoid, I do not recollect ever having read of or seen a case following German measles. The rarity of the association makes this example worth recording.

The patient, a spinster aged 23 years, was by profession a lecturer on art. She had had three attacks of measles, the last one year previously, and also scarlet fever, followed by diphtheria when about to be discharged from the hospital. After the diphtheria she had had paralysis of the soft palate and then tachycardia. She left the hospital with the latter, and it continued for several months before the rhythm returned to normal. The heart was left with no permanent damage. The appendix was removed in 1928. In February, 1929, she had influenza.

She came to see me on April 23rd, 1929, explaining that the glands on both sides of the neck had been swollen for six days. There was no local cause for the enlargement in throat, nose, scalp, or ear. The temperature was 98·4° F. and the pulse-rate 72. All the posterior cervical glands were enlarged on both sides and easily palpable. At the tip of each mastoid was a gland rather larger than the others. The axillary, epitrochlear, and inguinal glands were unaffected. There was no rash. Heart and lungs were normal and the spleen was not enlarged. On the same evening the temperature rose to 100·8° and a few spots appeared on the cheeks and neck.

On April 24th the morning temperature was 99°, and the evening temperature 101°. There was a typical, rather fine macular rash on face, neck, arms, and trunk. On April 25th the temperature was 98·4°; the rash was paler and the glands smaller. On April 26th the rash had almost disappeared and the glands were subsiding. On the same night at 10 o'clock she had violent occipital headache and shooting pains in the body, with a temperature of 101·8°. There were no physical signs. I was called to see her at 7.15 A.M. on April 27th as she had had no sleep owing to severe occipital headache. There had been no sickness. She then had a temperature of 102° and a pulse-rate of 96, regular. The head and neck were held rigid; the head could not be flexed on the sternum, and any attempt to do so made her shriek with pain. There was severe pain across the back, so that she was unable to raise herself in bed. The pupils were equal and reacted to light and accommodation. There was divergent strabismus of the right eye. All the other cranial nerves were normal. There was no loss of power in arms or legs and no rigidity in the limbs. The grasp was equal and the knee-jerks were brisk, but ankle-clonus was not present. Abdominal reflexes were present and Kernig's sign absent; and there was no tache.

On the same afternoon she was seen in consultation with a physician, to whom I suggested one of four diagnoses, viz.: (*a*) meningitis, (*b*) meningism, (*c*) encephalitis, (*d*) meningo-encephalitis. I also suggested lumbar puncture. None of my suggestions was accepted, as the condition was thought to be due to rheumatism, for which a salicylate and alkali mixture was prescribed. Retention of urine occurred during this evening. She had a bad night owing to severe occipital and vertical headache. She was sick four times during the night. On the morning of April 28th her temperature was 100·8° and her pulse-rate 108. There was no change in her condition. On this evening the salicylate had to be stopped as it was causing noises in the head. On the morning of April 29th the temperature was 101°. She had been sick during the night and retention of urine continued. There was diplopia with binocular vision and the right plantar reflex was extensor. The headache and rigidity of the neck and back were unaltered.

A second consultation was held, and this time a lumbar puncture was done. The cerebro-spinal fluid was not under pressure and came away in drops; it was perfectly clear and colourless but contained 296 cells per c.mm., chiefly lymphatic with some epithelial cells. The total protein was increased to 0·07 per cent.; no organisms were present and the Wassermann reaction was negative. The opinion of the pathologist was that the findings would fit in with an encephalitis, not lethargica. As the patient had had no action of the bowels since April 24th, in spite of mild aperients, she was given calomel grs. 2, followed by magnesium sulphate ℥1. On April 30th there was no action of the bowel and the urinary retention continued. There was somewhat less headache and rigidity of the neck. A draught of cascara and senna was administered, followed by a copious soap-and-water enema. The whole of the latter was retained and there was no result. On May 1st the headache was less and the head could be moved more freely. The catheter had still to be used, and there was no action of the bowel. She was given calomel gr. $\frac{1}{6}$ every hour, and later on in the day a soap-and-water enema, which produced a good result. Constipation had lasted a week. On May 2nd she was sick three times but the headache and rigidity of the neck were much better. On May 3rd she had five hours' continuous sleep and was free from headache in the morning. The left plantar reflex remained flexor and the right could not be obtained. There was no sickness. Diplopia and retention of urine continued but the bowels were well open.

Thereafter she continued to make good progress. The evening temperature fell gradually and reached normal on May 10th, when she was free from headache and could flex the neck fully. The diplopia had disappeared, both plantar reflexes were flexor, and the bowels were acting regularly, but retention of urine persisted, necessitating the use of the catheter night and morning. She passed urine spontaneously on May 12th. From this date progress was uninterrupted and recovery was complete. The attack left behind no tendency to headache, restlessness, or insomnia, nor did it interfere with any of her special senses nor dull the acuteness and rapidity of her intellectual processes.

I have retained the diagnosis of meningo-encephalitis for this case in spite of the fact that the pathological report lent no support to the idea that there was actual inflammation of the meninges. Unless there was considerable engorgement and irritation of the pia-arachnoid, such symptoms as violent occipital headache, vomiting, reflex spasm of the cervical and dorsal muscles, and obstinate constipation are difficult to explain. The characters of the cerebro-spinal fluid, the right external strabismus and diplopia, the retention of urine, and the right extensor plantar reflex point to encephalitis.

I have recently seen this patient and found her in vigorous health. She resumed her occupation at the beginning of October and found no disability after her illness. I have, of course, advised her to avoid mental strain and overwork, and to take plenty of rest in bed.

GENERAL MEDICAL COUNCIL.

PENAL CASES.

TUESDAY, NOV. 26TH.

ACCORDING to custom, the Council heard the cases in public, deliberated upon them in camera, and the President then announced the decision.

Reported from the Dental Board.

The Case of James Ireland, registered as of "Buena Vista," Costock, Nottinghamshire, "Dentist 1921."

In May, 1928, Mr. Ireland had been summoned by the Board to attend an inquiry in respect of convictions for (*a*) being drunk whilst in charge of a motor-car, (*b*) of driving a motor-car in a manner dangerous to the public, and (*c*) of being drunk and disorderly. The convictions were found proved, but judgment was postponed for six months. In November, 1928, the case was discharged, and Mr. Ireland gave his assurance that he would do his best to justify the leniency of the Board. He was informed that if he had to appear before the Board again, the result might be very serious. On May 29th, 1929, however, he was again convicted at the Nottingham police-court of being drunk and disorderly, and was fined 10*s*. He sent a letter to the Board's solicitor that he was not intoxicated or disorderly at the time, but was upset and excited owing to the loss of his money which had been picked from his pocket while waiting for a 'bus. He said he could not attend the inquiry owing to an injury to his leg in August last, when he was run down by a motor-car, and the consequent expense. He was asked to send a medical certificate of inability to attend, and thereupon submitted one dated August 21st, 1929, given him at the time of the accident, which stated that he was at that time disabled from following his employment. The police reported that when Mr. Ireland was arrested he was drunk and wanted to fight anyone near him.

The Dental Board had found the conviction proved, and advised that Mr. Ireland's name should be erased from the Register.

Mr. Ireland sent a letter pleading the hardship involved to his family if his name were erased. The Council directed the Registrar to remove his name.

The Case of Mihrane Haroutune Chirinian, registered as of 26, Coventry-street, London, W.1, "Dentist 1921."

He had at the County of London Sessions commencing on April 9th, 1929, been convicted (in the name of Mihrank Haroutin Chirinian) of stealing one suit-case and other articles, the property of Violet Gutteridge; one suit, the property of Airey and Wheeler; 24 pairs of silk stockings, the property of Etams, Limited; and one gold cigarette case, the property of Elkington and Company; and sentenced to three years' penal servitude and recommended for deportation. The Chairman of Session in passing sentence had said it was plain that Chirinian was a dangerous and dishonest man, who preyed upon everybody with whom he came in contact. Respondent had applied to the Court of Criminal Appeal for leave to appeal against the conviction, and the application had been dismissed. He had sent letters to the Board's solicitor and to the Registrar of the Board from H.M. Prison, Parkhurst, denying that he was guilty of the offences, and asking for a postponement of the inquiry until he was released from prison. He complained of not being given time enough to petition to the Home Secretary for permission to attend the inquiry, and his inability to engage a lawyer. The notice of inquiry had been sent to Mr. Chirinian on Oct. 17th, 1929, thus giving him ample time to apply to the Home Office and to engage a lawyer, provided he had the means for the latter.

The Board had found the conviction proved, and had recommended that the name of Mihrane Haroutune Chirinian be erased from the Register. Mr. Chirinian did not attend and was not represented. The Council directed the Registrar to erase his name.

Restorations to the Dental Register; Dental Education.

After further deliberation in camera the President announced that the following names had been restored to the Dental Register: Laurent Eugene Deprimoz and William Laird.

The Council then received and adopted the report of the Dental Education and Examination Committee. The University of Adelaide, Mr. Dolamore said, had now complied with the requirements of the Committee and it was therefore recommended that the degrees of B.D.S. and D.D.Sc. Adelaide be recognised as entitling to registration on the Colonial list. The Committee had observed that not all degrees in Great Britain and Northern Ireland and the Irish Free State were recognised as entitling to registration in South Australia. They also noted that persons whose names appear on the Dentists Register with a British degree or licence are required to pass a practical test in New South Wales. They desired that the attention of the authorities should be drawn to these anomalies. Conversations had taken place with a representative of the Japanese Embassy, and after careful inquiry the Committee was satisfied that the differences between the Japanese system of dental education and the British were so fundamental that it was not possible to permit Japanese dental qualifications to entitle the holder to registration in this country.

Mr. J. W. McGowan and Mr. E. L. Sheridan were appointed members of the Dental Education and Examination Committee in place of Mr. Guy and Mr. Ackland.

The Council considered in camera the *Case of James Edgar Nelson*, reported by the Dental Board, and the President announced that the case was to be remitted to the Board for further inquiry and report.

Medical Case Adjourned from November, 1928.

The Case of Bertie Edward Acland, registered as of 120, Leonard-road, Birches Head, Hanley, Stoke-on-Trent, M.B., Ch.B., 1924, U. Liverpool, who had previously appeared before the Council on the following charge:—

"That you were convicted at the Hanley petty sessions of the following misdemeanours—viz.: (1) On July 22nd, 1926, of being drunk in charge of a motor-car, and were fined £10 and witness fee £1 1*s*., or two months' imprisonment in default; and (2) on Oct. 2nd, 1928, of being drunk in charge of a motor-car, and were fined £20 and witnesses' fees £2 1*s*., and were disqualified for holding a driving licence for two years."

Last year the Council had postponed judgment. Mr. Acland appeared, and the Council's solicitor read letters from his professional brethren testifying to his sobriety during the past year and from the police authorities saying that there had been no further conviction against him. Mr. Acland spoke of the increase of his panel practice and assured the Council of his intention to abstain from alcoholic excess in future. The Council decided not to erase his name from the Register.

An Erasure for Immoral Relations with a Patient.

The Case of Angus Dugald Buchanan, registered as c/o Messrs. Crawford Herron and Cameron, 257, West George-street, Glasgow, C. 2, M.B., Ch.B. 1911, Glasg., who had been summoned to appear before the Council on the following charge:—

"That, being a registered medical practitioner, you abused your position by committing adultery with Elizabeth McCarron or Campbell, whom and whose family you had attended professionally, subsequent to which you were co-defender in the case of Campbell *v.* Campbell and Buchanan in the Court of Session, in which proceedings a decree of divorce was pronounced on Nov. 9th, 1928. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. Harper, the Council's solicitor, said that there was no complainant in this case, but the facts had been brought before the Council by Mr. Campbell. Adultery and professional relationship had been set out in the divorce proceedings, but the professional relationship was now emphatically denied and the respondent claimed that Mr. Campbell had known of the relationship and had shared in large sums of money paid by respondent to Mrs. Campbell. Dr. Buchanan had not contested the divorce proceedings but had left for Australia; he now maintained that the proof of

professional relationship in absentia was no proof. Mr. Harper had nevertheless put in evidence the divorce proceedings. It was claimed that coolness between the husband and wife had started from September, 1925, when the respondent had been called in professionally, but the husband had ascribed it to the neurasthenia from which she suffered. In 1928 the husband had learned that his wife and respondent had carried on frequent and continuous adultery from June, 1925. He believed that respondent had taken advantage of her neurasthenia to excite her passions. The sum of £1000 damages had been awarded by the divorce court.

Mr. Malcolm Campbell, examined by Mr. Harper, testified to his two declarations confirming the account of the case given by Mr. Harper. His wife had told him early in 1925 that she was being attended by Dr. Buchanan but he had never seen him in the house; he knew, however, that respondent had attended his son and daughter, and had seen in the house medicine bottles from Dr. Buchanan's surgery bearing his wife's name. He had never received any money from Dr. Buchanan, and he absolutely denied collusion, except that Mrs. Campbell had confessed and handed over Dr. Buchanan's letters in July, 1928. He had commenced divorce proceedings within a week, and had only seen his former wife once since the proceedings. So far as he knew, Mrs. Campbell had never received any money from Dr. Buchanan or anyone else. Mrs. Campbell had paid the fees in cash; he had never paid any bill to Dr. Buchanan. He had received anonymous letters about his wife, but when she had handed him Dr. Buchanan's letters he had been completely surprised. Mr. Harper read from an affidavit by Dr. Buchanan's nurse, saying that Mr. Campbell had appeared to be acting a part when he received the letters; this Mr. Campbell denied.

Cross-examined by Mr. Henderson, he said his first suspicion of anything wrong was on June 23rd, 1928, although it was true that Mrs. Campbell had been meeting Dr. Buchanan three or four times a week for three years. He had never asked her where she had been on the occasions when she had been out on his return from work. The anonymous letters had aroused momentary suspicions only. He denied that he had visited his wife since the divorce, tapping at the window for admission, or that he had been aware of his wife's relations with the doctor. He was aware that his wife had become possessed of a fur stole and silk underclothing; he had not bought them but had provided them. The piano and suite of furniture had been acquired before 1925. He had not noticed any marked increase in the comfort of the home after the meeting with Dr. Buchanan. His income had been £3 10s. a week. Mrs. Campbell had been called as a witness on his behalf in the divorce case; this had been arranged by the solicitor. He had not supported his wife since the divorce or given her any part of the damages. He had, however, helped his children with their education. He had paid a bill of two guineas from Dr. Buchanan early in 1928, but had never seen a receipt. He did not know of his own knowledge that his wife had ever visited Dr. Buchanan. She had been a patient of Dr. Scotland's before 1924; Dr. Scotland had never been to the house.

In answer to the Legal Assessor: Mrs. Campbell had herself brought home the bottles. On one occasion the daughter had fetched the bottle from Dr. Buchanan's surgery, and he had given her the money to pay for it, and had packed it off to his wife, who was on holiday. He had never seen any bottles from Dr. Scotland.

Mrs. Cumberford, Mr. Campbell's sister, testified to her declaration, in which she said that Mrs. Campbell had told her that she was dissatisfied with Dr. Scotland and proposed to change to Dr. Buchanan. She had accompanied Mrs. Campbell to the doctor's surgery and had seen her go into the surgery and receive and pay for medicine at his dispensary; she had seen Dr. Buchanan in her house. Mrs. Campbell had told witness that she had to go to Dr. Buchanan's surgery three times a week for treatment for sexual troubles and neurasthenia. Witness had never heard about varicose veins.

Cross-examined, she said she had been friendly with Mrs. Campbell until the divorce. She had been to the surgery twice and seen Mrs. Campbell pay for medicine both times, about April, 1925. Both doctors' names were on the bottle-label. Witness had not noticed a number. When Mrs. Campbell had been in bed Mrs. Johnstone had attended to her.

In reply to the Legal Assessor: Mrs. Campbell had first seen the doctor and then fetched the medicine from the dispenser. Witness was not sure whether or not she had handed any prescription to the dispenser.

In answer to the President, Mrs. Campbell had said she was going in to consult Dr. Angus Buchanan, but the consulting-room door was not marked with his name.

Mrs. Campbell testified to her statutory declaration, in which she admitted adultery with Dr. Buchanan, and that she had first met him professionally in his consulting-room and had continued his patient while adultery was taking place in the surgery and at the doctor's house. She had not entrapped him; the first suggestion had come from him. She had never received any money from him, and had never known Dr. Buchanan anything but "hard up." She had never been attended by any other doctor since two consultations with Dr. Scotland in September, 1924. She had had her first consultation with Dr. Buchanan in March, 1925, and had never before seen him; she had been recommended to him by an old friend. She had had medicine, powders, and pellets from him, and had paid for them as she went along. He had attended her for a gynæcological complaint and varicose veins. She had had £3 10s. a week from her husband, £1 from her daughter, and £1 from her son. She had never been expensively dressed. She had only had one fur and Mr. Campbell had given her the money for it. Dr. Buchanan had never given her any present; he had never had any money for himself. At present she was living with her children, and they were all working for their living. She absolutely denied collusion over the divorce proceedings.

Cross-examined, she said she had not spoken to her husband for a year. She had not seen him in Edinburgh after the divorce proceedings. She had been good friends with Dr. Buchanan until June, 1928. She had given evidence in the divorce proceedings to save her reputation. Her husband had paid nothing since the separation except 15s. a week for the younger girl. She had given her husband the letters because Dr. Buchanan's cousin had bullied her for them, and she had given them to Mr. Campbell instead. They had just happened to be in her possession that evening; she did not know why she had preserved those two. Misconduct had first taken place in June, 1925; she had made no confession to Mrs. Johnstone in February, 1926, and Mrs. Johnstone's evidence in the divorce case had been false. She had never treated Mrs. Johnstone as a friend; Mrs. Johnstone had done work in the house for money. She had not done everything in her power to facilitate the divorce; she had just sat still and waited. She maintained that her visits to the surgery had been professional, and that she had paid fees, on some occasions to the doctor personally.

In reply to the Legal Assessor, she said that intercourse had taken place in the surgery during surgery hours when other patients were waiting, and during consulting hours at his house.

Miss Margaret Campbell testified to her statutory declaration in which she deposed that she had been on Dr. Buchanan's panel. The date on her card was July 12th, 1924, and the card was signed by Dr. Buchanan's cousin and partner; she had, however, looked on Dr. Buchanan as her doctor. She knew that her mother had consulted Dr. Buchanan frequently and had seen her go into his consulting-room,

and had often called for medicines for her mother. She had taken prescriptions from Dr. Buchanan to the dispenser for her mother. Mrs. Johnstone had done charing for them; she repudiated Mrs. Johnstone's statement that she had said her mother had got a fur coat from Dr. Buchanan.

Cross-examined, she said she had consulted Dr. Buchanan's assistant about four months ago, and was still on the same panel.

In reply to the Legal Assessor: The insurance card was signed for the "doctors" Buchanan, and she had consulted both. She had handed prescriptions for her mother to two dispensers, a Miss Martin and a Mr. Muir.

By Mr. Henderson: Dr. Buchanan had seen her on June 16th, 1926, and his brother on a number of other occasions.

In reply to a question by Dr. Bone through the chair, she said she had paid the dispenser for her mother's medicine.

Mr. Malcolm Campbell, jun., testified to his statement, which declared that he had been on Dr. Buchanan's panel, and had been attended by him at the dispensary on several occasions since October, 1927. He had always understood that his mother was a patient; his mother had told him so, and there were always plenty of medicine bottles in the cupboard with his mother's and Dr. Buchanan's names on them. The date on his panel card was Oct. 26th, 1927.

Cross-examined, he said he was now on Dr. Donald Buchanan's panel but had never consulted him. He had never consulted Dr. Angus Buchanan personally. He did not remember any number on the bottles.

Re-examined, he had gone to Dr. Buchanan because he was the "family doctor."

By Mr. Henderson: His father's doctor was too far away. He did not know his mother had ever consulted Dr. Scotland.

The Defence.

Dr. Buchanan did not appear, as he had gone to Australia. He was represented by Mr. John Henderson, solicitor, who called Mr. R. Wilson Muir, M.P.S., the dispenser at Dr. Buchanan's surgery, who testified to his sworn statement. The prescriptions were all most carefully entered in a book, which was checked daily. He had known Mrs. Campbell and her daughter by sight; Mrs. Campbell had never been a patient and had never had any prescriptions dispensed or paid for any medicine. He had regarded her visits as friendly, and the attitude of the parties had been friendly rather than professional. Her custom had been to call just before closing time and wait until patients had gone. She had dressed like a young woman of fashion; this had been very marked. There was no entry in the prescription book relative to Mrs. Campbell or her daughter, and he recalled no case in which a prescription had not been entered. He described the booking system, and stated that the number was invariably written on the bottle. It was not true that Mrs. Campbell had received medicines from or paid money to him.

Cross-examined, he said he had received all moneys paid and had given them to the doctor at the end of the week. He had never been present at an interview between Dr. Buchanan and Mrs. Campbell; he had gathered from their manner and certain incidents that the relation was friendly and not professional. Once when Dr. Buchanan had been ill and his cousin had been in his place she had refused to see the cousin, saying it was "nothing like that." Other patients invariably went to whichever partner was sitting if one of them was ill.

By Mr. Henderson: The labels on the bottles said "Drs. A. D. and D. C. Buchanan."

By the Legal Assessor: He had been there from 1925 to the end of September, 1927, and his hours had been from 9.30 until he was finished—7 or 8 P.M. Patients walked into the waiting-room and asked him for the doctor they wanted; he showed them by which door to go in, and they went in by themselves. The whole surgery was shut if he went out. The entry in the prescription book had always been made at the time of dispensing the bottle; medicines were not usually made up by the partners themselves so far as he knew, but it was possible for them to dispense at night or in his absence without his knowledge.

Mr. Henderson then read the deposition of Miss Sadie Forbes, dispenser and bookkeeper, still in the employ of Dr. Donald Buchanan. She had never regarded Mrs. Campbell's visits as professional, and there were no prescriptions or fees in the books under her name. The books were most carefully kept. Mrs. Campbell had called near closing time, and on one occasion had bade another patient go in before her as she was not seeing the doctor professionally.

Dr. Donald Campbell Buchanan testified that respondent's father had founded the practice, and that witness had taken it over now that respondent and his family had settled in Australia. Witness knew all his partner's affairs, and the books had been most accurately kept. He was convinced that Mrs. Campbell had never been a patient of Dr. Angus Buchanan. He had first heard of Mrs. Campbell as his cousin's mistress through an anonymous letter in 1926, and had taxed his cousin, who at that time had denied the allegation. Witness had noticed the remarkable change in Mrs. Campbell's turn-out. In 1928 Dr. Angus had confessed and witness had interviewed Mrs. Campbell apart, and she had stormed and sworn and refused to let the matter drop if respondent went abroad. Respondent had said she was determined to ruin him. No suggestion of professional relationship had been made at that time or previously. The son and daughter had been witness's panel patients, and the rule in Scotland was that partners must have separate lists. He had never known a case of a prescription not being entered. He had checked Mr. Muir's prescription book every night; each bottle dispensed was priced. There was no mention of Mrs. Campbell's name in the books of the partnership, which he had searched for the years since 1922. The only entry by Dr. Angus Buchanan on Miss Campbell's panel record was during witness's holiday month.

Cross-examined, he admitted that either partner might attend the other's panel patients. He had got to know Mrs. Campbell by sight when she had accompanied her daughter in 1925. At first she had dressed as an ordinary working woman, but later she had dressed much more richly.

By the Legal Assessor: It was possible to make up a bottle of medicine without making an entry in the book, but he had never known it happen and the dispenser would notice the mess made. It was also possible for one partner to receive cash fees without paying them to the partnership.

By the President: Although his partner had deceived witness about the liaison he believed that he had now made a clean breast of everything.

By Sir Robert Bolam through the chair: The son's card had been signed by Dr. Angus Buchanan, but by the usual regulation of the National Health Insurance he had been transferred to witness's panel when witness took over the practice, as he had not removed his name in response to the routine notice.

By Dr. Brackenbury, through the chair: The ledgers were before the Council for the period covered by the two-guinea bill, and no such entry was to be found in them. Patients seen at the house took the prescription down to the dispensary.

Miss Agnes McDougall, district nurse in the neighbourhood since 1924, testified to knowing the parties and noticing the change in Mrs. Campbell's appearance and the laundry she had hung out in 1925. She had seen Mr. Campbell tap at the window of Mrs. Campbell's room and gain admittance since the divorce.

Mrs. Margaret Johnstone said that she had known the Campbells for 13 years, and had been very intimate with Mrs. Campbell for many years. Mrs. Campbell had worn a shawl at that time and been a poor woman. Dr. Angus Buchanan had never been

the Campbell's doctor. She had introduced them in her own house in a friendly way, not in the least professionally. In 1926 Mrs. Campbell had confessed that the relations were and always had been guilty, and that they had started from a meeting in the street out of surgery hours. Mrs. Campbell had then said that she intended to squeeze the doctor dry and keep him in her hand till she had, and that her separation from Mr. Campbell had been due to her relationship with the doctor. After 1926 new furniture and new clothes had appeared. The neighbours had been outraged by her conduct. Dr. Buchanan had called openly in the forenoon. Witness had never nursed Mrs. Campbell, and had never been in the house as a paid charwoman or servant. She had followed Mrs. Campbell, and had seen her meet the doctor on several occasions in different streets; she had set off at twenty to three every day and returned about six. She had followed Mrs. Campbell and seen her meet the doctor every day for about three months.

Mr. Henderson put in a sworn statement sent by Dr. Angus Buchanan from Australia. He stated that he was married and had three children under 14. He confirmed the material facts of the case and declared that he had been introduced to Mrs. Campbell by a Mrs. Johnstone. Their relationship had been purely social. Mrs. Campbell had first suggested intercourse and had threatened to expose the affair to his wife when he had tried to break it off. She had demanded money and received about £2 a week for two years. When he had told her he was going on a holiday she had declared he should not go unless he paid for a holiday for her. Her demands had become more insistent and finally he had told his wife all about it. He had at no time acted as medical adviser to Mrs. Campbell or her family.

Mr. Henderson addressed the Council, submitting that the case against his client had not been proved, that the affair was simply that of a paid mistress who was willing to do her best to ruin the man who had discarded her. The evidence for professional relationship was confined to the relatives and rested on the question of medicines. It was quite true that medicines could have been made up by the practitioners themselves, but the evidence of these relatives was that the medicines had been made up by the dispenser, and the money tendered to him on many occasions. It was incredible that the name of Mrs. Campbell should invariably have been omitted from the books by that dispenser, years ago, before any question of proceedings had arisen. Mrs. Campbell's meeting with Dr. Buchanan had nothing to do with the fact that her daughter had previously joined the panel of his partner. By the time the son joined Dr. Buchanan's panel the relationship had existed for two years.

Mr. Harper briefly addressed the Council. After deliberation in camera the President announced that the Council had found the charge proved to their satisfaction, and directed that the name of Dr. A. D. Buchanan be erased from the Register.

Advertising in India.

On Wednesday, Nov. 27th, the Council considered *the Case of Ratilal Shivlal Shah*, registered (Colonial List) as c/o Umjamshi S. Shah, High Court Pleader, Rajkot, India, M.B., B.S. 1922, U.Bombay, who had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you have advertised for the purpose of obtaining patients or promoting your own professional advantage—viz.: (1) By the issue of two leaflets in respect of two medicines concocted by you, to wit 'Shwetanjan' and 'Muktanjan.' (2) By calling your private home or dispensary 'Dr. Shah's Eye Hospital' or 'Dr. Shah's Ophthalmic Hospital.' (3) By inserting, or sanctioning the insertion, or acquiescing in the insertion, in the March, 1928, number of a Gujarati paper called *Sharda* of an advertisement of the above-mentioned remedies. (4) By inserting, or sanctioning the insertion, or acquiescing in the insertion, on another page of the issue of the said paper *Sharda*, a portrait of yourself with a laudatory notice below such portrait. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The Council's attention had been drawn to this case by the Bombay Medical Council. Mr. Shah did not attend but was represented by Mr. H. F. Parfitt, of Messrs. Minet, May and Co., solicitors. The Council's solicitor related the facts, and both solicitors addressed the Council. After deliberation in camera the President announced the decision of the Council as follows :—

"I have to announce that the Council have decided that they will not now proceed to decide whether the facts alleged against Mr. Shah in this notice of inquiry have been proved or have not been proved, on the ground that the materials for a decision are insufficient. They will, therefore, ask you both to appear in November of next year, and to bring up further evidence, Mr. Harper from the Bombay Medical Council, and Mr. Parfitt, on behalf of Mr. Shah, if he has anything further to say then."

The Council received a report from the Executive Committee that the name of Ewen Cameron McLeod had been removed from the Register of the College of Physicians and Surgeons of Manitoba. The Committee was satisfied that Mr. McLeod had not been deprived of his qualification on the ground of his adoption of any theory of medicine and surgery. It was moved by the Chairman of Business, seconded by Sir John Moore, and agreed that the name of Mr. McLeod be removed from the Register in respect of the qualification of M.C.P. & S. Man. 1926, therein recorded.

Restorations.

The President announced that the Registrar had been directed to restore to the Medical Register the names of Bernard Wilfred Goldstone and David Davey Rosewarne.

Association of a Practitioner with a Company Trading in Secret Remedies.

The Case of John Forrest Hamilton, registered as of Mexborough House, Mexborough, Yorks, M.B., Ch.B., U.Glasg., 1919, who was summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner: (1) you have associated with a person or persons (unqualified) for the purpose of treating persons in respect of matters requiring professional discretion or skill; (2) having acquired a part interest in certain secret remedies, preparations, and medicines from unregistered persons, you are engaged in association with them in the sale for your own profit of such secret remedies, preparations, and medicines. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The complainants were the Medical Defence Union, represented by Mr. Oswald Hempson. Respondent appeared in answer to his notice.

Mr. Hempson read out the prospectus of a company called "Lunvitre, Ltd.," of which the address was that of Dr. Hamilton, and of which Dr. Hamilton was a director. The memorandum of association showed that Dr. Hamilton was associated with two other directors, one of them a miner, and that the objects of the association were to acquire and trade in secret preparations and medicines for the treatment of tuberculosis of the lungs and other disorders, and such other secret preparations as seemed fit to the company. Another document was signed by Dr. Hamilton as secretary of the company. Part of the defence was that no trade had been carried out. The Medical Defence Union had no interest in waiting until the offence had become indisputable; as soon as they heard of the intention they placed the matter before the Council for a ruling. Mr. Hempson argued that it was infamous for a professional man to have any interest in the sale of medicines, particularly for a disease like tuberculosis, where general treatment was of such importance. A Mr. Webster, chemist, had written to the company about the "Lunvitre" treatment for tuberculosis, and had received a reply

signed by "J. Hamilton." The reply was typewritten on business notepaper with all the usual company notices in its letterhead and a highly coloured representation of a Red Indian's head. The letter undertook to execute a commission in a month's time, and claimed marvellous results for the medicine, referring to "hundreds of testimonials." In his defence Dr. Hamilton had quoted from correspondence with his lawyer and with the British Medical Association, but had torn his quotations from their context. The Registrar had written to Dr. Hamilton in August, 1929, warning him that association with the proposed company would be highly undesirable for a registered practitioner. Dr. Hamilton had replied at some length on Sept. 13th, 1929, admitting that he was chairman of directors of a limited company, but maintaining that no harm had been done since trading had not yet been commenced, and that his position was comparable with that of any doctor holding shares in a trading concern. He declared that he would not prescribe for his own patients any product marketed by the company. On Sept. 19th the Registrar had replied as follows :—

"J. F. Hamilton, Esq., M.B.

"DEAR SIR,—In reply to your letter of Sept. 13th, I regret if it appears that mine of the 27th ult. was not sufficiently clear. There are certain practices which, without bringing a medical man within the precise terms of the warning notices, may nevertheless be considered contrary to the best interests of the profession, and to be deprecated by his fellow practitioners of good repute and competency. Amongst these has been considered the pledge of secrecy where the composition of remedies is concerned, and the association, whether openly or otherwise, with a concern devoted to their manufacture.

"The Council have never attempted to control the field of investments open to a medical practitioner, but, without introducing any element of compulsion into their opinion, they feel that in the best interests of the profession it would be wiser for a medical practitioner to seek a return for his capital in directions other than patent medicines. If, notwithstanding, he is determined to keep up his connexion with a proprietary company, he is at least requested to see that no use is made of his name and qualifications upon official stationery, nor that his name and qualifications are made use of for the purpose of advertising the products.

"Should your association with the direction of the proprietary medicine company become known to your professional colleagues, you will almost certainly be made aware of their disapproval, and may probably be made subject to complaints to the Council regarding your action. The legal fact that the company is technically a separate entity would not protect you against such complaints.

"Yours faithfully,

"NORMAN KING,

"Registrar."

The Medical Secretary of the British Medical Association had noticed the company's advertisement and had written to Dr. Hamilton, as a member, warning him that it was contrary to all tradition that a medical man should have any interest in the sale of patent medicines. An accountant had replied on behalf of Dr. Hamilton on Sept. 9th arguing in justification : (1) that the company was a separate legal entity ; (2) that Dr. Hamilton had never proposed to take any step which would bring business to the company by virtue of his medical degrees ; (3) that the company did not propose to use as advertisement the fact that one of the directors was a medical man. The Medical Secretary had replied that in view of the general opinion of the profession he was sorry that Dr. Hamilton had taken this position, although the safeguards would appear to meet any objections of the General Medical Council.

Dr. J. Neal, Secretary of the Medical Defence Union, testified to his statutory declaration confirming the facts set out by Mr. Hempson and the steps taken by the Union to investigate them.

Cross-examined by Dr. Hamilton, Dr. Neal said that it was not necessarily derogatory for a medical man to hold shares in a trading firm or, further, to have some say in its direction.

Re-examined, he explained that the nature of the company and to a lesser extent the degree of the association would influence his opinion about the association of a medical man with a company.

Mr. T. Gething, an accountant, of Mexborough, testified to his declaration describing how he had bought a bottle of "Lunvitre" from Mr. G. H. Jones, who had told him that the company had also remedies for rheumatism and gall-stones which would be on sale the following week. He had also said that Dr. Hamilton's coachhouse and stables had been converted into a factory, and that as Dr. Hamilton knew where to get the drugs the cost was reduced. An old lady and a man had been present at this interview. He declared that 105, Market-street was Dr. Hamilton's private address, and produced the entry in the Voter's Register in confirmation. There was no plate on the door of that house. Mr. Jones had said that the cure had been given to him by an old Indian in Canada, and the Indian's head would be the trade-mark of the company's products.

Cross-examined, Mr. Gething denied that he was collector for a firm of doctors who had been asked by Messrs. Hempson to collect evidence, and denied that he had a grudge against Dr. Hamilton as a result of accusations brought about him some years ago. He had never heard any doctor say it would be worth £500 to him to get Dr. Hamilton out of Mexborough. He had gone to Mr. Jones's house about a debt with which he was dealing and had spoken about that account before mentioning "Lunvitre." He reiterated the statements in his declaration, particularly that Mr. Jones had said that both he and Dr. Hamilton saw patients. Mr. Jones had not made the bottle up for him as a favour ; it had been already made up.

The bottle was produced. The label contained the words, "The great remedy for all lung troubles. Manufactured solely by G. E. Jones, 40, Doncaster-road, Mexborough."

Mr. Sinclair, M.P.S., deposed that he was a chemist and had traded with Mr. G. E. Jones for two or three years. Mr. Jones had purchased pure glycerin, syrup of mulberry, oil of juniper, Friar's balsam, and sal volatile. The first two were ingredients for the "cure." Since the company had been formed, Mr. Jones had told him that the recipe was obtained from an American Indian, and that an Indian was to appear on the label. He had referred to a film which had been prepared to advertise the remedy, and said he had entered into partnership with Dr. Hamilton for the preparation of the remedy, its factory to be at 105, Market-street. Witness was familiar with Dr. Hamilton's signature on prescriptions, and thought the signature on the letter from "Lunvitre, Ltd.," closely resembled his, though the initials were not quite as usual.

Cross-examined, he asserted that Mr. Jones had repeatedly used the word "cure." He had supplied Mr. Jones with glycerin and syrup within the last seven days. He denied ever discussing the cure with respondent.

In reply to the Legal Assessor, he said there were some outbuildings attached to 105, Market-street.

The Defence.

Dr. Hamilton gave evidence on his own behalf. He declared that for eight years he had been persecuted by a medical partnership who, he believed, were the informants in this case. This firm had complained to the Medical Defence Union eight years ago that respondent was touting for patients. The Union had, however, failed to get evidence. The firm had complained to the local ethical medical society and had had him boycotted in his absence ; after investigation he had been completely cleared and invited to join the society. An attempt had been made to exclude him from the local hospital by underhand means. He had been approached by Mr. Jones, a patient of his, who had asked for help. Out of sympathy, respondent had offered to give him a chance, intending to get out of it as soon as Mr. Jones

was launched. He had signed such documents as the chartered accountant had put before him, and had had no idea that the matter could ever become public. The accountant had advised him that the position was quite in order and comparable with that of any doctor who held shares. The letter from Dr. Cox had arrived just as he was going abroad on holiday, and he had handed it to the accountant to answer. On respondent's return from holiday the accountant had handed him Dr. Cox's reply with the remark that everything was all right. Respondent had told the accountant that if there was to be any statement in the public press he would not have anything to do with the company. The announcement had apparently been put in as a matter of local news interest. He had understood from the Registrar's letter that this was not an offence against the Council's standard. Had he understood that it would be regarded as infamous conduct he would have severed his connexion with the company at once. He knew the constituents of the medicine and used many of them, but not in a form which would connect with "Lunvitre." There had never been any suggestion that he should visit any customers as patients. The manufacture and sale had been held up since Sept. 12th until this inquiry had been settled. The premises he had leased to the company had been a boat-building depôt adjoining his garden, and bought by him a little time ago. His house was known only as "Mexborough House" and had no number; he had had no idea until that day that he was registered as of "105, Market-street." His coachhouse and stables had been turned into a garage. The building leased to the company had no connexion with his house and had a brass plate affixed to it according to law; this was 100 yards at least from his professional plate, and was not visible from the road.

Cross-examined by Mr. Hempson, respondent admitted having signed the letter to Mr. Webster, but said he had disguised his writing on purpose. No appointment of managing director had been made; the only manager was Mr. Jones. He denied that the letter to Mr. Webster was his letter; he had taken very little interest in the whole thing. He was not aware that Mr. Jones had twice been convicted and imprisoned for fraud, and a few weeks ago had been arrested for street-betting. Nor did he know that Mr. Jones had visited patients; he disclaimed all knowledge of letters, produced by Mr. Hempson, in which Mr. Jones gave advice, advertised the patent remedies of the company, and mentioned respondent's name. These letters were dated October of this year. Mr. Jones had assured him that he had never said anything to connect respondent with the company. He admitted that a large consignment of bottles and corks had been ordered and paid for by a cheque drawn by respondent on "Lunvitre." As a doctor he agreed that it was most improper to encourage self-medication, and that tuberculosis ought not to be treated by a collier. He knew of several people who had made rapid strides when taking the remedy, but had never said it was a wonderful thing and had no opinion one way or the other on its merits. Permission had been refused to use the Red Indian's head as a trade-mark in July or August. A film representing the rescue of a Red Indian by Jones had been made, with a view to ultimate advertisement; respondent had assisted at this show. He had looked upon it as a joke. Jones had told him he had hundreds of testimonials; respondent had seen a box purporting to be full of letters and had looked at two or three of them. He denied any association with Jones in selling the remedy or treating patients; that had been the intention had no objection been raised, but as neither sale nor treatment had actually occurred he refused to admit the charge.

In reply to the Legal Assessor: Jones had sold the recipe to the company for 50 shares; the actual money had never been put up. The only cash subscribed was respondent's £50; he and Jones would each receive half the profits, and it was to their interest to make as much profit as possible. He had signed what the accountant had asked him to sign, trusting to the accountant, and had taken no interest to see what he was signing. The company was to pay £1 a week inclusive of rates for rent of the premises, but no money had yet been paid. No rent was to be charged until trade began. Those premises were to the side of his house and the only means of access to them was over land belonging to him.

By the President: He did not know whether he had expected interest on his £50 or not. The company had a banking account of which respondent was in control. Jones had had no control of it at any time. He had put another £20 into the account beyond the original £50; this was to provide Jones with more shares. Jones was to take over the shares gradually.

A member: "Does Dr. Hamilton, knowing the composition of 'Lunvitre,' believe that it has any value in tuberculosis?"

Dr. Hamilton: "I have made it a rule never to express any opinion, but if I am compelled to answer that question I would say, Yes, I do believe it would be of value."

Mr. G. H. Jones testified to his statutory declaration, describing the visit of Mr. Gething. He admitted that in obliging Mr. Gething with a bottle of medicine he had violated his agreement with the company; for this he had been reprimanded by the company. He denied all the other episodes related by Mr. Gething, that he had mentioned Dr. Hamilton and that any advertising had been carried on. He had known on May 23rd that the Indian's head could not be used as a trade-mark, and was not likely to have told Mr. Gething that it would be the trade-mark. He had been 20 years with his last employer and produced a testimonial. He had used the word treatment but never "cure" in connexion with the remedy. He had bought nothing from Mr. Sinclair since the receipt of the warning letter from the Council. He had written the letter to Mr. Webster himself and had had no advice about it; respondent had signed it in a great hurry without reading it, and witness had remarked that the signature was unusual.

Cross-examined by Mr. Hempson, witness said he could not remember whether any letters had passed between him and respondent before the formation of the company. One hundred envelopes had been printed with the company's name and were kept at Doncaster-road. He was the managing director of the company, but could not explain why he did not sign the letters of the company. He had copied the letter to Mr. Webster; the language was his own. He had not sold a bottle of "Lunvitre" since Oct. 12th. He did not see that he was compelled to account to the company for the money paid him by Mr. Gething. He went round to treat cases of hæmorrhage; Dr. Hamilton knew this. He had never spoken at meetings, but had been on the platform at meetings where tuberculosis was discussed. Nobody had ever called him Dr. Jones. The date of his testimonial was Feb. 1st, 1928.

Dr. Hamilton read statutory declarations from Mrs. Jones and Mrs. Rymer, a midwife, confirming Dr. Hamilton's account of the interview between Mr. Jones and Mr. Gething, and put in medical certificates accounting for the absence of these witnesses.

He then addressed the Council on his own behalf, emphasising that he had had no idea that Jones had sold any bottle other than the one supplied to Mr. Gething or had purchased any chemicals since the receipt of the warning notice. He admitted signing the letter to Mr. Webster carelessly and in a hurry, but maintained that he had had no idea of its contents. He pleaded that it was a letter within the trade and no evidence of advertisement to the public. The disguised signature was an honest attempt to avoid bringing his profession into the business. Since seeing Mr. Jones in the box he no longer felt able to claim that Mr. Gething's evidence was untrue, but he submitted that what Mr. Jones had said did not incriminate him. It was his last wish to do anything

degrading or dishonourable to his profession. There had been no evidence of any sale of medicines with the knowledge and consent of the company. He quoted again the letter to the accountant from the Secretary of the British Medical Association saying, "I have carefully considered the points you raise, and the safeguards which Dr. Hamilton has taken seem to me pretty adequately to cover any objection which might be taken by the General Medical Council." He humbly submitted that the Council was in honour bound by the letter of its executive officer. Respondent had definitely asked whether his association with the company would be regarded by the Council as infamous conduct in a professional respect. The Registrar had replied in a manner which respondent had unhesitatingly interpreted as a negative. This case was without precedent, and it was very difficult for a young practitioner to determine what might and might not be done. The scheme had been foolishly and carelessly undertaken; but he had acted in good faith, and had taken advice from a chartered accountant and a solicitor. If they had been right, that was his justification; if they had been wrong it showed the difficulty of finding out the Council's wishes. No matter what the decision of the Council, he would sever all connexion with the company.

Mr. Hempson addressed the Council. The respondent had, he said, been warned both by the British Medical Association and by the Registrar. Dr. Cox's letter had been addressed to the accountant, and under those circumstances might well hesitate to use the strong terms of condemnation that might be directed to the doctor himself. Jones had admitted that the letter to the chemist had been written from a draft, and it was obvious that the draft had not been composed by Jones. In Mr. Hempson's opinion the original defence was not an honest one; Dr. Hamilton had not at first realised the seriousness of his position. A more heinous case of association with unqualified practice could not be conceived. Dr. Hamilton had put up money to help a well-known quack to exploit a secret remedy for one of the most fell diseases in this country, and thus to prevent people from getting adequate treatment. While the charge as a whole had been denied, every point in it had been separately admitted.

The President announced that the Council had found the charge proved to their satisfaction and had directed the Registrar to erase Dr. Hamilton's name.

Alleged Canvassing.

The Case of Nagib Iskander, registered as of 96, Primrose-lane, Hall Green, Birmingham, M.B., Ch.B., 1926, U.Birm., who had been summoned to appear before the Council on the following charge:—

"That, being a registered medical practitioner, you have systematically canvassed for patients by means of agents, and in particular: (1) on or about March 1st and April 29th, 1929, so canvassed Mrs. Elizabeth Howell; (2) on or about March 21st, 1929, so canvassed Mrs. Gladys Martin; (3) on or about March 21st, 1929, and about a week after, so canvassed Mrs. Emily Hall; (4) on or about April 18th, 1929, so canvassed Mrs. Dora Lilian Harrison; and (5) on or about April 20th, 1929, so canvassed Mrs. Gwendoline Ruth Morgan; and that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainants were Mr. V. A. Goldman, M.R.C.S. Eng., Mr. P. Carroll, L.R.C.P. Edin., and Mr. C. C. Blair, M.B. Glasg., represented by Mr. Goldman. Mr. Iskander attended in answer to his notice, accompanied by Mr. Davis, of Messrs. Bulcraig and Davis, solicitors. Mr. Goldman proceeded to lay the facts before the Council, and read five statutory declarations from the five ladies mentioned in the charge; none of them was present.

At this point the President, having consulted the Legal Assessor and the Council, announced that there was no evidence connecting the charges with Mr. Iskander, and the case was dismissed.

(To be continued.)

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

AT a meeting of this Society in London on Nov. 29th, with Dr. F. J. H. COUTTS, the President, in the chair, papers on the

Urinary Excretion of Novarsenobillon in Syphilis, and its Relation to Toxic Effects

were read by Dr. N. L. LLOYD and Mr. V. E. LLOYD. Despite the wide use of salvarsan and its derivatives during the last 15 years, said Dr. Lloyd, the fate of these compounds in the body was not yet fully understood, though it was known that a considerable proportion of them was excreted soon after injection, principally in the urine and fæces. The inter-relation of intensity of therapeutic effect, rate of elimination, and toxic manifestations was of considerable importance. There was now a good deal of evidence of deterioration of hepatic efficiency following the use of these compounds; jaundice sometimes appeared, and might continue even after treatment was stopped. The chief aim in treating syphilis was to attain the maximal therapeutic action with the minimum of toxicity. At the beginning of treatment any reliable test which would reveal patients who were specially susceptible to toxic effects must be of value in deciding dosage. One of the practical objections to the present tests was that they took so much time that employers had to know why abstention from work was necessary. Accordingly Dr. Lloyd and his brother had been led to use a colour reaction, described by Abelin in 1911, which was very simple and did not need any special apparatus. Abelin's test depended on the conversion of the arsenobenzol into a diazo compound and the subsequent linking of this body to some member of the phenol or naphthol groups with development of a colour. Patients receiving salvarsan showed its presence in the urine five to ten minutes after injection, and Abelin had demonstrated that excretion continued as long as seven hours. Elimination was found to be more prolonged in tertiary syphilis and neurosyphilis. Absence of elimination should lead to careful examination of the patient before going on with treatment. Several workers had shown, however, that the rate of excretion did not decline in regular progression. It was noted that the drug disappeared rapidly from the blood stream, but it could not be demonstrated in the cerebro-spinal fluid except after massive doses in dogs. The fæces gave negative reactions.

In outline the test was as follows:—

Five c.cm. of the fluid to be examined was placed in a test-tube and cooled in running water or ice. To this was added 0·5 c.cm. of 5 per cent. hydrochloric acid, and after a few minutes 1 c.cm. of a 0·5 per cent. solution of sodium nitrite. The solution was kept in running cold water for ten minutes. In a second test-tube was placed 4 c.cm. of a 10 per cent. solution of resorcin in water and 1 c.cm. of 10 per cent. sodium hydroxide. Then the contents of the first test-tube were added to those of the second tube. The presence of arsenobenzol was shown by the development of a colour which varied from red to reddish-brown, and this colour appeared immediately. Experiments showed that a red colour developed in watery solutions of a strength of 1 in 20,000. By looking through a depth of fluid of 5 cm. with transmitted light, a positive result could be seen in a dilution of 1 in 100,000. With urine, however, one could not be sure of a definite result in a higher dilution than 1 in 50,000.

It was not essential that the urine should be tested immediately it was passed; urine left as long as ten days gave as good a result as immediately after it was voided. The following organic preparations, tested in vitro in a strength of 1 in 1000, had given markedly positive results: novarsenobillon (N.A.B.), metarseno-argenticum, metarsenobillon, stabilarsan,

sodium silver salvarsan, kharsulphan, sulpharsenol. Results were negative with watery solutions of atoxyl, stovarsol, tryparsamide, bistovol, and neobistovol. The investigation of phenacetin had proved interesting. In vitro no colour developed, but the urine voided up to a period of three to four hours after an oral dose of grs. 15 phenacetin gave an almost identical red colour with this test. In short, Abelin's test was reliable but not absolutely specific. It did not indicate the presence of arsenic.

Mr. V. E. LLOYD dealt with the clinical application. To ensure that the bladder was empty and to see whether elimination of a previous dose had ceased, a specimen of urine was collected from each patient before injection of N.A.B. Supplied with three 1 oz. bottles, patients were told to bring back on the following day a small quantity of the first three consecutive voidings. 1330 tests were performed in the investigation of 397 injections, and a qualitative scale was used to express the results. Positive results were obtained within an hour, and excretion could easily be followed up for 24 hours, or longer. The reaction was usually markedly positive from two to six hours after 0·45 or 0·6 g. N.A.B. Injection of 0·3 g. yielded results slightly less intense.

After an account of a series of cases tested Mr. Lloyd said it soon became apparent that there was a close association between inefficient urinary elimination of N.A.B. and toxic effects in the patient. It had been found in rats that the toxicity of organic arsenical compounds of the trivalent and pentavalent groups was inversely proportional to the rate of excretion in urine and fæces. In man delayed jaundice following injection of organic arsenical compounds was well known as a late toxic effect, and it seemed that the power of the liver to deal with these substances grew less as treatment progressed. During these investigations five cases of salvarsan jaundice and six of exfoliative dermatitis were tested and in none of them could any elimination of N.A.B. be detected. Severe toxic jaundice occurred in five cases, and in none of them had elimination been consistently good with the Abelin test. Among 36 cases in which excretion was known to be unsatisfactory, toxic effects were noted in 19. The intimate relation between toxic jaundice and indifferent excretion raised the suspicion that at least some cases of salvarsan jaundice were due to the action of the aromatic amino radicle in the salvarsan compounds, rather than to the arsenic itself. Toxic jaundice, and even "acute yellow atrophy" of the liver, had been reported following oral administration of atophan, a compound which did not contain arsenic. Jaundice was an exceptional result of poisoning by inorganic arsenic, and chemical analysis of liver from patients who died from salvarsan jaundice did not show any undue accumulation of arsenic. Animal experiments had demonstrated that the most rapidly excreted arsenical compounds tended to be the least effective, probably because of the brevity of their action.

Discussion.

Dr. DAVID WATSON thought these contributions were of great importance. This test seemed to be the simplest yet suggested, and he was anxious to put it into operation.

Colonel L. W. HARRISON suggested that the reason for the delayed excretion of the amino-benzol radicle might be that it had been seized upon by the liver-cells. For years he had protested that one should not speak of arsenical but of arsenobenzol jaundice, underlining the last syllable. This idea was strongly supported by the likeness of these cases in many respects to poisoning by trinitro-toluene and by histological examination of the liver. If this supposition were correct, we might have in the Abelin test a means of rapidly determining the value of any measures to avoid the amino-benzol group being taken up by the liver-cells. He had tried previous administration of glucose for this purpose; patients so treated might show by the Abelin test a more rapid excretion than did others.

Dr. H. C. SEMON did not remember to have seen toxic jaundice or exfoliative dermatitis following the use of salvarsan; but there were other symptoms of arsenical absorption, such as neuritis and changes in the skin, following long-continued administration of the drug by the mouth.

Major E. T. BURKE said it would be an excellent routine in clinics that, even in cases in which the kidneys appeared to be normal to ordinary tests, Aberlin's test should be carried out on every patient after he had received one or two injections, since the renal excretory function might be abnormal only in respect of arsenobenzol. He was much interested in the references to jaundice. He attributed the rarity of jaundice in his practice to two facts: (1) he used stabilarsan as a routine, and he thought that the glucose, being dissolved in an isotonic solution, acted as a barrier against toxicity; (2) he gave arsenobenzol and bismuth alternately, not concurrently. He would now try the Aberlin test on some recent cases of jaundice which he had seen. He had observed bismuth jaundice in a number of patients who had had no arsenobenzol at all. It would be useful to know what proportion of an intravenous dose of arsenobenzol was therapeutically utilised. Levaditi's experiments seemed to show that arsenobenzol did not exert a direct lethal effect on the organism. These contributions were a step towards establishing the ideal dosage—i.e., one which reduced elimination to a minimum whilst retaining the maximal therapeutic effect.

Dr. H. M. HANSCHELL spoke of a case six years ago in which a man was admitted to hospital diagnosed as having a granular kidney, and treated with a dose of 0·3 g. N.A.B. because of a positive Wassermann. Two days after the injection he died, apparently because of the kidney trouble. Since then, however, Dr. Hanschell had administered stabilarsan to many subjects of renal disease (as shown by albuminuria, casts, &c.) apparently without any ill-effects. He thought, therefore, that the fear of administering arsenobenzol in the presence of renal disease was largely exaggerated. His practice had been to administer stabilarsan and bismuth at the same time, and jaundice had occurred in only one case.

Dr. B. B. SHARP asked whether, if Colonel Harrison was right in thinking that glucose protected the liver-cells from the benzol radicle, it would not increase the renal excretion in a previously bad excretor. It would be well to carry out ordinary excretory tests on the kidney in all bad excretors, to see if the kidney was holding back other substances also.

Dr. DAVID NABARRO thought that though the test was very valuable, it would be difficult to carry out in children. Children's organs were usually in much better working order than those of their elders, and toxic symptoms following the use of arsenicals were less likely owing to rapid elimination of the drug.

The PRESIDENT felt that the test would prove valuable. The chemistry of the body was still largely a closed book. It had been a matter of speculation whether any portion of the arsenobenzol compound passed through the body unchanged. In some cases, it appeared, the test was quite negative, and this suggested either a decomposition so complete that none of the benzol radicles passed into the kidneys, or alternatively a very complete absorption by some of the cells of the body.

Dr. N. L. LLOYD, in reply, said that no work had been done by his brother and himself on the effect of giving glucose in improving the voiding of the product by bad excretors. They had tried sodium thiosulphate without success. Three of the five severe cases of jaundice in the clinic had not had any bismuth.

Clinical Cases.

Dr. HANSCHELL showed two patients.

The first was a man who, 20 years ago, acquired a primary chancre. Sixteen years ago his hair began to fall out, and apparently he had had no treatment. He had now received 15 injections of stabilarsan and bismuth. Three weeks after this treatment ceased the man returned with an acutely inflamed tongue. A week later still he developed severe

jaundice. The Wassermann reaction was still strongly positive, and the question was whether the condition of the tongue was due to syphilis or was a later arsenical manifestation. This was the first case in 3000 given stabilarsan by him which had developed jaundice after it.

The second patient was a Chinaman, who came from his ship with the diagnosis of acute syphilitic myelitis. He was unable to stand or work. He also had a Hunterian chancre on each eyelid, hard and firm. The knee-jerks were entirely absent; the pupils reacted to both light and accommodation. He had an acute attack of beri-beri. No spirochætes had been found, and antisyphilitic injections had not produced any effect.

Dr. SEMON thought that in the first case the tongue was syphilitic.

JOINT TUBERCULOSIS COUNCIL.

AT a meeting of the Council held on Nov. 16th, Sir HENRY GAUVAIN presiding, the hon. secretary, Dr. ERNEST WARD, gave an account of the present position of the scholarships in Canada and America next year offered by the Sun Life Company. A selection and management committee was appointed as follows: Sir Henry Gauvain (for the Ministry of Health), Prof. Lyle Cummins (to represent the National Association), Dr. Lissant Cox, Dr. G. Jessel, and Dr. Ward. The following memorandum was adopted:—

Improvement of the Tuberculosis Service.

The efficiency of the tuberculosis service varies widely in different districts, but backward areas are being improved by wise stimulation from headquarters. Supervision should not be used so as to hamper individual initiative or impede experimental methods. The chief factor in success is the personality and ability of tuberculosis officers and superintendents of sanatoriums, and to secure this remuneration sufficient to attract good officers is all-important. An indifferent officer fails to obtain the confidence and esteem of the general practitioners on whom so much depends.

It is better to have fewer and better-paid officers with larger areas that a large number of poorly-paid men and women of mediocre capacity. Rural areas of 250,000 population and urban areas of 350,000 can be managed by one whole-time officer, with adequate medical and clerical assistance, and would provide sufficient remuneration. The service should be graded so that those who had acted as assistants might become higher-salaried, whole-time, consultant tuberculosis officers or senior sanatorium superintendents. Superannuation schemes should be generally adopted, or so arranged that an officer does not lose by transference to another district.

The tuberculosis officer and sanatorium superintendent should have at their disposal facilities for diagnosis, such as an X ray outfit, and for special forms of treatment, such as light and artificial pneumothorax. Each tuberculosis officer should have hospital beds. Dispensary and sanatorium officers should be first and foremost clinicians, but should have a public health outlook. Facilities to attend post-graduate courses are of the highest importance. In certain circumstances, where the sanatorium belongs to the authority responsible for the district in which it is situate, it may be advantageous for the medical superintendent of a sanatorium to be responsible for the tuberculosis work in the vicinity of the institution as part of his whole-time duties. It is not intended that this should apply to sanatoriums other than those under direct control of local authorities.

The practitioners' sense of responsibility in the diagnosis, prevention, and treatment of tuberculosis must in no way be impaired, and it is the first duty of dispensary and sanatorium officers to ensure this. One of the most helpful qualifications for these officers is to have been themselves in private practice. Any improvement in the tuberculosis service is closely bound up with the preliminary training of men entering this service, and with the education of medical students and general practitioners in tuberculosis.

A memorandum on the notification of tuberculosis was also adopted. Dr. Lissant Cox undertook to prepare an investigation on the fate of delicate children in tuberculous households. The Research Committee suggested as a further inquiry, the Occurrence of Acute Tuberculosis in Infants and Children under 5 Years of Age. Dr. W. Brand reported that the course in X ray work at the Brompton Hospital was already fully booked; a second course was being arranged after Christmas.

Reviews and Notices of Books.

PRACTICAL LOCAL ANÆSTHESIA.

Its Surgical Technique. Second edition. By ROBERT EMMETT FARR, M.D., F.A.C.S. London: Henry Kimpton. 1930. With 268 engravings and 16 plates. Pp. 611. 42*s*.

THE first edition of this book appeared nearly seven years ago. Since that time the use of local analgesia has extended considerably and fresh drugs have been brought into play, tutocain, for example, and novocainborate. The value of the book, however, does not depend so much on its being up to date in detail, but on the excellent way in which the broad principles involved in the practice of local anæsthesia are enunciated and explained by the author. His forecast is that "unlike the past, the future will find available individuals who are equipped to offer to patients the greatest merits that local anæsthesia possesses. These surgeons will not only be able to anæsthetise thoroughly the various regions of the body with minimum discomfort to the patient—but will, in addition, realise the full significance of surrounding and protecting the patient with every available artifice essential to its successful use. This concept embodies a large variety of factors. It demands the coöperation of every individual who—in any manner, comes into contact with the patient, the office force, hospital managers, nurses, interns, equipment and, indeed, every factor entering into the patient's environment from the time of his first visit till he is discharged." This statement may appear overloaded, but there is no doubt that attempts at local anæsthesia often meet with only partial success because of the lack of importance attributed to apparently irrelevant accessories. The stage in fact must be perfectly set, and all, not only the chief, actors thoroughly trained in their parts when a conscious patient is being handled. It is from this point of view that the combination of powerful sedatives with local anæsthetics is so important and one may well believe that the success of the latter will be enhanced and their use made more popular by familiarity with such agents as avertin and paraldehyde. The author, however, rightly lays stress on the necessity for the surgeon who wishes to succeed with local anæsthetics being proficient in operating with them on perfectly conscious patients. The method is, in fact, often brought into disrepute by its occasional practice by men not versed in its niceties. As the author writes: "Surgeons of repute would, without doubt, freely admit that none but the most perfectly trained experts should be allowed to administer general anæsthesia, yet without any special training or experience in the use of local anæsthetics they appear to be quite willing to proceed to use them upon their patients." Referring to the early occurrence of pain after operations under local anæsthetics, the author recommends the giving of morphia hypodermically before the patient leaves the table. In wounds which are to heal by granulation, quinine-urea hydrochloride 1 in 600 should be liberally injected as a prophylactic against after pain. Opium is to be used freely during the first 48 hours. All details of technique are fully discussed and illustrated by the numerous diagrams. The author is, of course, an enthusiast for the method of local analgesia, but his support of it is logical, and he does not fail to point out the care and patience which it demands for success.

PRACTICAL SURGERY.

Beiträge zur Practischen Chirurgie. By Dr. ALBERT KRECKE. Two volumes. Munich: J. F. Lehmann. 1929. Pp. 1094. M.12.

THESE two volumes are composed of short essays on subjects suggested by the work the author has carried out in his private clinic during the period 1923–26. There is much sound common sense in

his reflections, and it is of interest to read how a practical general surgeon solves the problems coming his way and how his conclusions have been arrived at. Failures are impartially reported with successes. The sections are short and serve to pass an odd hour with profit and entertainment.

ELEMENTS OF HYGIENE AND PUBLIC HEALTH.

Third edition. By J. P. MODI, L.R.C.P. & S., L.F.P.S., Reader of Medical Jurisprudence in the Faculty of Medicine, Lucknow University. London: Butterworth and Co. (India), Ltd. Pp. 645. 10*s*.

THIS is a manual designed for Indian students of public health. It is ambitious in scope and covers the whole field of public health activity, special attention being given to the sanitary problems peculiar to India. In the chapter on ventilation much space is accorded to relatively unimportant details (for example, enumeration of types of inlet), while there is only a brief reference to the work of Leonard Hill (page 93) and no mention of the kata-thermometer. A useful section on the construction of hospitals and schools (page 145) is included, although the size of wards suggested (viz., 40, 32, and 24 beds) does not conform to modern ideals of hospital administration. The chapter on meteorology and climatology contains no reference to ultra-violet rays. Evidence of faulty proof-reading is furnished on page 228, where hydrogen peroxide is described as destroying the water-soluble B-vitamin, thus depriving milk of its *antiscorbutic* properties. In the description of the modes of infection the important method of droplet spread is omitted, and the discredited view that foul air plays a part in the transmission of dysentery and diarrhœa is included. Damp soil is held to predispose to tuberculosis, diphtheria, measles, and other diseases. Noguchi's leptospira is still described as the causative organism in yellow fever, though its association with the disease is not now accepted. The arm-to-arm method of vaccination still appears to enjoy pride of place in India. The hypothesis that putrid meat causes ptomaine poisoning should no longer find a place in a text-book. No reference is made to bacterial agents of food poisoning. The book is marred by a certain crudeness in style and occasional misuse of words.

DISEASES OF THE SCALP.

Pelades et alopècies en aires. By Dr. R. SABOURAUD, Director of the Paris Municipal and St. Louis Hospital Laboratories. Paris: Masson et Cie. 1929. Pp. 378. Fr.80.

THE appearance of this the fifth and last of his series on diseases of the scalp almost coincides with Sabouraud's retirement from hospital routine. The five volumes have occupied his spare time for thirty years, and is not the least of many monuments to his indefatigable diligence and devotion to the scientific progress of dermatology. The subject is arranged in sections which deal consecutively with the microscopic appearances, the bacteriology, the differentiation of analogous conditions of hair loss, heredity and congenital syphilis, causes suspected by patients, associated disorders of the menopause, thyroid dyscrasia, which the author favours as a factor in some cases; and finally, a masterly consideration of the sympathetic and reflex nervous theories first propounded by the author's fellow-countryman, N. Jacquet. The last section is a general summary, and reviews the best of the many treatments that have been advocated. As in the other volumes there are many excellent reproductions of original drawings from microscopic sections and clinical photographs.

There is no cutaneous abnormality so mysterious and dramatic in its manifestations and so frequently discussed as alopecia areata. It has evolved or, rather revolved, in the course of decades through nervous, infective, toxic, reflex, and endocrine-sympathetic phases of conjecture and hypothesis. There is no general agreement to date. A certain "quid ignotum" remains to be discovered—a common factor which will explain the mechanism of production in every case. The subject teems with difficulties, for we are but floundering at the periphery of the endocrine-sympathetic physiology, and are still seeking the instruments of precision which are now available for estimating the functions of most of the other systems and organs of the human body.

The author's modest claim will, we think, be conceded by every reader. "If our conclusions remain dubious, we have at least illuminated the subject to the best of our ability, and we may thereby have facilitated the work of those that shall follow after."

PHARMACOLOGY.

Pharmaceutical Therapeutics, with Pharmacology, Posology, and Toxicology. By ELDIN V. LYNN, Ph.D., Professor of Pharmacology and Chemistry, University of Washington, College of Pharmacy, Seattle. London: McGraw-Hill Publishing Co., Ltd. 1929. Pp. 431. 20*s*.

Prof. Lynn, while not in favour of prescribing by druggists, holds the opinion that the capable pharmacist, in addition to his knowledge of the chemical and physical properties and doses of drugs, must be acquainted with their physiological action and therapeutical uses. This view may be correct, but since it would involve the pharmacist of the future in the strenuous duty of studying anatomy, physiology, pathology, and clinical medicine, he might well prefer to take a medical qualification. The following description of the physiological action of digitalis might well bewilder the reader. "The most prominent result is a powerful persistent stimulation of selected medullary areas, including the vagus, the vomiting center, the heat regulation, the respiration, and the reflexes." The author says in the preface that he has freely consulted numerous treatises on pharmacology, therapeutics, and toxicology. On the whole, he has given a good account of the action and uses of drugs, but it is difficult to see what advantage the book presents to the student of pharmacy over similar works intended primarily for physicians.

Theoretische und Klinische Pharmakologie. Third edition. By H. V. HOESSLIN, Prof. Dr. med., und FRANZ MÜLLER, a.o. Prof. Dr. nat. et med. Leipzig: Georg Thieme. 1929. Pp. 231. M.8.60.

THIS book was published originally in 1921 by Prof. Müller as a companion volume to his text-book for dental students, and while based on the well-known work of Meyer and Gottlieb, was intended to give a succinct account rather than an elaborate discussion of experimental and clinical pharmacology. That it appealed to the German student is indicated by the fact that in 1924 a second edition appeared under the joint authorship of Profs. Hoesslin and Müller, the collaboration of a clinician resulting in a broader discussion of clinical subjects. The general plan is that followed by most modern text-books of pharmacology and therapeutics, though the introductory chapter deals in somewhat greater detail than is usual with the subjects of prescribing, dosage, and the preparations of drugs. There is a short account of general pharmacology, but the bulk of the book deals with special pharmacology, the drugs being classified according to the system on which they exert their main action. By adopting the didactic manner and avoiding discussion, the authors have succeeded in packing more information regarding the action and uses of drugs into its pages than appears in most other works of a similar size. The third edition has brought the book into line with the advances in pharmacology during the past four years, and deals with many of the drugs recently introduced into medical practice. It can be recommended to the busy practitioner as a handy manual of reference, and to the student as a companion to his lectures.

THE LANCET.

LONDON: SATURDAY, DECEMBER 7, 1929.

AMENDMENT OF THE LUNACY ACTS.

THE new Mental Treatment Bill which was read a second time in the House of Lords last week was, as may be seen from our Parliamentary correspondent's report, well received. Lord RUSSELL in his opening remarks stated that the Bill had the approval of the chairman of the recent Royal Commission, and we believe that in so far as it provides increased facilities for the treatment of mental disorders the Bill will commend itself to the medical profession. There are certain details to which exception may be taken, but when these are amended the result of its enactment will be to bring the treatment of mental illness much more in line with the general practice of medicine than it has been in the past. Persons suffering from milder forms of mental disorder will, regardless of their social position, be able to obtain treatment without certification and without suffering from any civil disability. The Bill is a short one of 22 clauses. Clauses 1–5 make provision for the treatment of voluntary boarders. Clause 5 provides for treatment without certification of persons temporarily incapable of volition. Clauses 6–10 deal with the duties of local authorities in these matters. Clauses 11–14 provide for a reorganisation of the Board of Control. Clause 16, in amending Section 330 of the principal Act, raises the important question of the protection of medical men signing certificates.

Everyone is agreed that our public mental hospitals should be able to receive voluntary patients. The scandal will at last be ended that persons applying for treatment in these well-equipped hospitals built at public expense should be refused treatment and virtually told to go away and wait until they are bad enough to get certified as insane. Few will quarrel with the proviso that the name of every voluntary patient admitted to a recognised mental hospital or licensed home must be notified to the central authority. The position is, however, very different when voluntary patients are admitted to general hospitals, nursing homes, or under the care of medical men privately. If a person with mental disturbance voluntarily ask for treatment in a hospital or home why should he more than any other invalid have to be notified to the Board of Control? Who, it may be asked, is going to make a distinction between hysteria and mental disorder or to say that this or that person is sufficiently over the border-line to be notified? It is obvious that those in charge of such patients, let alone the patients themselves and their relatives, will object to compulsory notification, with the result that there will be considerable evasion of the law. It should be remembered that Section 315 of the principal Act is not repealed and that anyone who receives persons of unsound mind for profit will be liable to prosecution; indeed if this Bill passes the section may well be much more strictly enforced. Doubtful cases there will always be, and those in charge of them, perplexed and worried at the possibility of prosecution, will prefer to inform the Board of the presence of such patients. If, instead of requiring that all persons with mental disorder who present themselves voluntarily for treatment should be notified, the Bill left this to the discretion of those in charge, the possibility is that all doubtful cases would be reported. This should in itself be a sufficient safeguard. If there were no concealment the evil of illegal detention would be to a very large extent prevented. Whilst it must not be concluded that mere notification would necessarily be a bar to prosecution under Section 315, it is not likely that the Board would initiate proceedings when they had had opportunity of ascertaining all the facts. We trust that obligation to notify all voluntary mental patients will be withdrawn and discretion left to the medical man responsible for the treatment of the patient. We also concur with Lord DAWSON in wishing to drop the word "boarder" altogether. It is most undesirable to draw a distinction between boarder and patient; all are patients and the term "voluntary patient" is sufficiently explicit.

The clauses of the Bill providing temporary treatment for persons unable to exercise volition without certification will prove a great boon to many. The acute puerperal case, many post-febrile confusional cases, a large proportion of alcoholic and toxic insanity will be treated to recovery without formal certification. The procedure recognises recommendations by two medical practitioners, one of whom must either be the usual medical attendant of the patient or a practitioner appointed for the purpose, either by the Board or by the local authority. This creation of a specialist class, although in some respects open to exception, may prove desirable on the balance; it will make the position of practitioners generally much easier if in difficult cases they can call to their assistance someone whose knowledge and experience have official recognition. It is most satisfactory that the Minister of Health has had the courage to depart from the recommendations of the Royal Commission in dispensing with the application to a judicial authority in respect of these cases. How patent it is to everyone with clinical experience that the recommendations—reluctantly proposed by the Commission—requiring an application to a justice of the peace before securing temporary treatment, would defeat the end in view. These patients are not being detained against their will, they are confused and indifferent, and their relatives would certainly not apply to a magistrate unless compelled to do so; serious delay would result and the procedure would resemble so closely that adopted for the certification as of unsound mind that the provision would be hardly worth while. In the House of Lords debate Lord BRENTFORD seemed to suggest that a judicial inquiry was desirable, and the Lunacy Reform Association will press for it. We are of the opinion that the intervention of a magistrate is neither a protection to the patient nor to the medical man who signs recommendations or certificates; it generally means delay, and the protection afforded is illusory. Neither the Royal Commission (nor, we believe, the Departmental Committee which preceded it) was able to find a single case of any person improperly detained; it is surely clear that the public has no cause for disquietude.

The proposed reorganisation of the Board of Control does not greatly affect medical men generally, but

Clause 16 which is designed to give greater protection to medical men signing recommendations and certificates is of great importance. Practitioners are now so unwilling to sign certificates that there is often serious difficulty in securing treatment for insane persons. The actual effect of the new clause is difficult to forecast; we must confess that we do not see a great deal of difference between it and the sections of the previous Acts which it replaces. It is perhaps more emphatic, but it does not appear expressly to say that on the person who wishes to bring an action lies the onus of proving that the medical man "has acted in bad faith or without reasonable care." We have never asked for the recommendations or certificates of medical men to be entirely privileged—privilege would necessitate a judicial inquiry under conditions inimical to the treatment of mental illness; it is clear, nevertheless, that they should not be exposed to the expense and annoyance of proving their good faith and care in the discharge of an unwelcome public duty. The present law does not effectively prevent this, and the new clause must be so drafted as to carry out the manifest intention of the legislature. It is a fact, we believe, that generally in proceedings involving an allegation of negligence—for instance in a case arising out of a collision between two motorists—a much more emphatic proof of carelessness is insisted upon in charges of criminal negligence than in civil actions for damages. It might be possible to insert in the Bill a proviso that no certifying practitioner be held liable in damages except upon clear proof of such degree of negligence as would justify conviction upon a criminal charge.

OPERATION FOR DETACHMENT OF THE RETINA.

THERE are few ophthalmic surgeons who cannot count on the fingers of one hand the cases of "cure" of detached retina within their own personal experience. Yet there are two facts that prevent us from giving up every case that we see as entirely hopeless. One is that there is not the slightest doubt that sometimes, after a shorter or longer interval and with or without treatment, a reattachment does take place, it may be with some restoration of function, and that in many cases where this does not occur extension of the detachment is arrested, and a certain amount of useful vision retained even for a considerable period. The second fact is that when a detachment occurs the detached portion does not at once necessarily lose its function and become dead like the superficial layer of skin over a blister. The detached layer is not in fact the complete retina, but only the part corresponding to the anterior part of the primary optic vesicle. After invagination has taken place there is always a potential space between the anterior and the posterior layer, the latter developing into the pigmented epithelium and always remaining attached to the choroid by which it is nourished. True, the rods and cones which go with the anterior layer are also normally nourished by the choroidal vessels, but when a detachment occurs they seem to be able to derive sufficient nourishment to maintain life for a time, either by lymph from the retinal capillaries whose branches penetrate from within as far as the external molecular layer (but not as far as the nuclei of the rods and cones) or from the choroidal vessels through the intervening layer of fluid. Exactly how this happens has never been adequately investigated, but there is no doubt that it does happen. As H. L. EASON puts it, "For some long period after a detachment the nutrition of the retina remains quite unimpaired and vision is recovered immediately contact with the pigment layer is restored." At any rate this occurs in some cases. Illustrations of these two facts will be found in the discussion which took place in the Ophthalmological Society at its congress of 1915 and the findings of the committee appointed to report on the subject.[1] The latter deals with 85 cases of "cure" in the sense that the retina had gone back into position and stayed there for six months. Now since according to all our past experience the complete reattachment or permanent cure of a detached retina must be considered as exceptional, it is important to classify the cases according to their different causes with a view of determining whether some are more hopeful than others.

Roughly and according to different estimates, from one to two-thirds of the cases are associated with myopia, but it is remarkable that cases of high myopia, higher than 10 or 12 dioptres, are not more liable to detachment than cases of moderate myopia below 10 dioptres. The first classification therefore may be made between myopic and non-myopic cases. The latter may be classified into (1) those associated with a new growth; (2) albuminuric cases which may be subdivided into those associated with pregnancy and those not so associated; (3) those associated with cyclitis or choroiditis; (4) traumatic cases; (5) those in which no definite association can be discovered. Of these the two classes in which the prognosis is not so bad as the average are first the cases of albuminuric retinitis of pregnancy and secondly simple traumatic cases due to an effusion of blood or lymph into the inter-retinal space. Cases of detachment may be classified in what is perhaps a more fundamental way into those which depend on a push from behind and those which depend on a pull from in front. Some authorities in the past have attributed all or almost all detachments to exudation from the choroidal vessels into the inter-retinal space and an osmotic action between that and the vitreous chamber (Rachlmann's diffusion theory). Others have attributed all or nearly all cases to the formation of bands in the vitreous attached to the inner surface of the retina pulling on it and in some cases causing holes in it (Leber-Nordenson theory). Since in some cases the first of these two theories has been proved to be correct and in other cases the second, the truth would appear to lie not between the two theories but to embrace them both, with the proviso that neither must be regarded as applying to all cases. Another classification which by some is regarded as of fundamental importance is into those cases in which there is a hole or holes in the retina and those in which there is none. If there is a hole connecting the inter-retinal space with the vitreous chamber and the vitreous is fluid (as it generally is in these cases) it is obvious that any treatment by rest or by puncture which may result in a temporary emptying of the inter-retinal space and reapp cation of the retina proper to its pigmentary layer can be of no permanent benefit. Sir WILLIAM LISTER has demonstrated this point with great clearness.[2] On the other hand, it is supposed by some that nearly all cases of detachment are associated with a hole which, however, is often so far forward in the region of the equator that it may be very difficult to detect with the ophthalmoscope.

As to treatment, we must first of all exclude those

[1] Trans. Oph. Soc., 1915, p. 69; 1916, p. 352.
[2] Brit. Jour. Oph., January, 1924, p. 1.

cases in which the detachment is merely a symptom of an underlying tumour, cases in which no treatment but excision is indicated, as well as cases of complete funnel-shaped detachment in which any treatment is obviously futile. Setting these aside the different methods which have been adopted in the endeavour to find a cure for the condition may be divided into non-operative and operative. The former include rest in bed for some weeks with or without such measures as pilocarpine injections to secure free diaphoresis. Of the latter simple evacuation of the fluid by scleral puncture is the simplest, but the use of the cautery to secure inflammatory adhesion at the site of the puncture is also widely practised. Multiple incisions into the vitreous chamber division of the vitreous bands and in certain cases injection of sterilised calf's vitreous into the chamber are the principles of Deutschmann's operations (1895) by which he claimed a large proportion of successes—lacking endorsement, it is true, from any other operator. Iodine, which was at one time injected subconjunctively, has been revived in the form of subcutaneous injection designed to promote absorption of the effused fluid (RICHARD KERRY of Montreal[3]). The subconjunctival injection of a solution of salt or other fluids calculated to produce counter-irritation is a procedure that can do no harm and is frequently practised. At the recent International Congress at Amsterdam Dr. J. GONIN, of Lausanne, showed paintings of patients treated by a new method designed to close up the hole in the detachment by means of the thermocautery, the results being said to be remarkable. In the report of the Ophthalmological Society of 1916 already referred to, 44 of the 85 cases of cure followed some form of operation, usually scleral puncture, in 41 no operation was done, and in 24 the reposition of the retina took place spontaneously in the absence of any treatment or after treatment had been tried and proved unsuccessful. It is noteworthy that in none of the successful operation cases is there any note of the presence of retinal holes, but in three cases of spontaneous cure holes were noted. With regard to all operative procedures except, perhaps, simple puncture, we have to take into account the fact emphasised by ERNEST THOMSON[4] that in a certain proportion of cases they have actually done harm, as well as the fact that statistical evidence shows that up till 1910 the proportion of cures claimed for non-operative treatment was nearly as great as that for operative. Writing in 1910, THOMSON found that taking the average of the claims of cures by various operative methods he could not put it at higher than 10 per cent., whereas the claims of other writers who adopted solely non-operative methods averaged a proportion of cures of 7 per cent.

Since these percentages are derived from more or less selected cases which different writers have chosen to illustrate the results of the various lines of treatment advocated by them, it is safe to surmise that the actual percentage of cure in all cases is very much lower, and seeing that, so far as is known, the prognosis of operative treatment has not materially improved since THOMSON'S estimate was made in 1910 the particular line of treatment chosen must be left to individual judgment. At the present time the balance of benefit can hardly be said to be decidedly in favour of operative treatment. The most hopeful line of advance in the future would seem to be an increasing knowledge of the pathology of detachment and especially as to the causation and significance of holes.

[3] Brit. Jour. Oph., May, 1928, p. 246.
[4] Ophthalmoscope, 1910, p. 430.

SOME EFFECTS OF MUSCULAR EXERCISE.

THE physical consequences of heavy exertion have not been worked out at all fully, but modern methods of investigation are steadily supplying us with facts on this subject which are of practical importance in clinical medicine. It has long been known, for instance, that muscular exercise increases the pulse-rate and is followed by a fall in the blood pressure, and radiology now enables us to say that it decreases the size of the heart. While most observers agree about this decrease, they are by no means unanimous when saying at what point it begins. Probably, however, it is present during the muscular effort itself; this is at any rate the view of F. DEUTSCH,[5] who studied Olympic athletes in 1928, and in some 90 per cent. of them found a diminution in the diameter of the heart immediately after maximal physical exertion. The decrease of volume may last a considerable time; after prolonged effort, such as the marathon race, it may persist for 24 hours. The degree of exertion, says DEUTSCH, is reflected not so much in the extent of the decrease as in the time it lasts. Thus the sprinter and the marathon runner show similar diminution in cardiac volume, but the former gets over it relatively quickly. P. P. GOTTHARDT,[6] in a report of nearly 1000 radiographic examinations of the hearts of athletes, agrees in finding no relationship between the reduction in the size of the heart and the kind of exercise undertaken. While it is difficult to say what is a large heart or a small one for a given individual, he came to the conclusion that the relatively large hearts lessened in volume more than the relatively small ones. In his long series he found no form of athletics in which an abnormally large heart was the rule. On the contrary, the bulk of his subjects showed heart widths smaller than the average for people who had not undertaken heavy athletics. The only possible exception to this rule were the swimmers, and it was noted that boxers, runners, and oarsmen had especially small hearts. After months or even years of strenuous athletics no cardiac enlargement could be detected beyond what might be expected from natural growth. The average diminution in transverse diameter after exercise appears to be about 1 cm., and it is not very easy to account for it. Since it follows mild as well as severe exertion, it cannot be due to exhaustion; nor is it wholly dependent on changes in pulse-rate or blood pressure. Rather it must be an expression of alteration in the peripheral circulation brought about, DEUTSCH suggests, by oxidative conditions in the tissues themselves—e.g., accumulation of CO_2 or lactic acid, or altered viscosity of the blood—which affect the venous filling of the heart. If, as is likely, the decrease is present during exertion, it cannot be looked on as a state of recovery, but must be recognised as an accommodative response of the healthy cardiac muscle. Possibly a shortening of muscle follows a brief initial stretching which results from increased diastolic filling. In a diseased organ this shortening may fail to take place, and hence permanent dilatation may follow. According to this view, lasting enlargement from extreme exertion would be evidence that the muscle was previously damaged.

Another organ whose reaction to exercise has lately been investigated is the spleen. Prof. JOSEPH BARCROFT, having formerly shown that muscular effort causes remarkable variation in its dimensions, now (with H. FLOREY[7]) brings forward evidence that in the dog a contraction of the spleen persists when

[5] Med. Klin., 1929, xxv., 628.
[6] Münch. med. Woch., 1929, lxxvi., 1117.
[7] Jour. Physiol., Oct. 23rd, p. 181.

exertion is over. In one case, for example, after moderately severe exercise, it contracted to almost half its resting size and remained in this condition for the 20 minutes during which the animal was under observation. This reduction in the volume of the spleen may be looked on as part of a reserve mechanism whereby the active muscles receive as much blood as possible for their all-important work. BARCROFT quotes M. S. PEMBREY and others as having demonstrated a corresponding constriction of the renal vessels during severe exercise. The existence of such a reaction is of no little practical importance, and it must clearly be taken into account in conditions like the so-called orthostatic albuminuria. It has long been realised, of course, that traces of albumin are commonly to be found in the urine in normal subjects after strenuous muscular exercise. Recent information about this is provided by O. HUG[8] who, in a study of the Swiss marathon runners in 1928, found a greater or lesser degree of albuminuria in every one of them after the race, whereas beforehand none had shown any abnormality in the urine. The quantities of albumin varied between 0·2 and 0·8 parts per 1000, the average being just under 0·4 per 1000, and these are striking figures which may well cause surprise. Even more remarkable, however, were the results of the microscopic examination of the urine. In every case in which sufficient urine could be obtained immediately after the race large numbers of hyaline and granular casts were found, together with a few red blood cells. In almost all the subjects the benzidin test on the urine was positive—an observation which is suggestive, despite the well-known drawbacks to this test when applied to the urine. Two of the runners were still passing casts and red blood cells in the urine when re-examined 8 and 14 days after the race. Such findings point unmistakably to some definite damage to the structure of the kidney as a result of the exertion, but their like has seldom been recorded by other investigators. HUG suggests that an important factor in the 1928 race was the extreme heat of the day, whereby the competitors were overheated and their urinary secretion was excessively reduced. Possibly their renal damage may be largely attributable to the very high acidity of the urine under such circumstances in combination with the vaso-constriction described by PEMBREY. Such inquiries might well be pursued further—perhaps with particular reference to functional albuminuria and related problems.

Such questions as these are closely bound up with the interesting phenomenon of the second wind. This is so definite, and happens so quickly, that it has been put down to the activation of a reserve mechanism—possibly a change of blood pressure, of sweat production, or of coronary circulation. K. F. WENCKEBACH has drawn a striking analogy between the "dead point" (Totenpunkt) occurring just before the onset of second wind, and an attack of angina pectoris—a comparison which his novel theory of this condition supports. It may be, as GOTTHARDT suggests, that an initial stretching of the heart at the onset of violent exercise is followed at the moment of second wind by the secondary contraction to which we have referred. Stretching and distension of hollow viscera is certainly a more frequent cause of pain than is contraction, and the same may perhaps be true of the blood vessels themselves. As WENCKEBACH has pointed out, pain is absent during the vaso-constriction brought on, for example, by cold, but comes on with extraordinary intensity—as all will remember—during the succeeding period of vaso-dilatation.

[8] Schweiz. med. Woch., 1929, lix., 522.

Annotations.

"Ne quid nimis."

ST. BARTHOLOMEW'S HOSPITAL APPEALS.

ON Wednesday last, by setting in motion a revolving beacon, the Prince of Wales, the President, inaugurated an appeal for a million sterling for the reconstruction, enlargement, and re-equipment of St. Bartholomew's Hospital. The appeal was made at a gathering in the Great Hall, and it was fittingly made not merely to London or these islands but to the Empire at large. St. Bartholomew's, founded more than 800 years ago, is the mother-hospital of the British realm, and its claim is as undeniable as its needs. The appeal comes appropriately from the heir to the throne, for St. Bartholomew's has always been the especial care of the Crown, and it holds from his ancestors a dozen charters at least.

A round million is a formidable sum of money, but a little consideration shows that the estimate is not extravagant. It is plain that a building largely 200 years old cannot meet the necessities of so elaborate a mechanism as a modern hospital, and it will no doubt surprise many people to learn that the small maternity ward at St. Bartholomew's is housed in an attic, with dormer windows. Anything more unsuitable cannot be imagined, unless it be the necessity, only now obviated, of wheeling patients to and from the operating theatres across an open quadrangle. Many of these disadvantages to patients, medical staff, and nurses are still being endured. Some of them are in course of removal, but they cannot be completely obviated until the success of the appeal enables the Governors to replace archaic conditions by modern ones making for smooth and easy working, the comfort of patients, and the convenience of those who tend them. A good beginning has already been made. The rapid progress of surgery puts heavy demands upon all hospitals, and St. Bartholomew's has found it necessary to build a new surgical block of 250 beds, with five attendant operation theatres, and to enlarge Queen Mary's Nurses Home to accommodate 50 more nurses. All this work is in progress and nearing completion. It will cost £231,000, of which £133,000 has yet to be provided. A great new out-patients' block, its central hall seating 850 people, with all the necessary appurtenances, has already been built. What has been done and is being done is, however, only an instalment—much more "remains behind." The south, west, and east quadrangle blocks have to be replanned and grouped departmentally, the eighteenth-century fronts being retained. Attic floors will be removed and replaced by new ones, and the south quadrangle block will be given a flat roof for air and sun treatment. Children in-patients, who are at present in adult wards, will be placed in a separate department, the maternity and gynæcological unit will be transferred to the present casualty block, and the new out-patients' block will be completed by the erection of orthopædic, massage, and children's out-patients departments on the site of the obsolete anatomical lecture theatre, chemistry and biology schools of the medical college. That college is to be enlarged by new buildings adjoining the Harvey laboratories, which will provide lecture theatres for medicine and surgery, and laboratories with full provision for research for anatomy, biology, and chemistry, departments at present crowded into inconvenient and obsolete quarters. When money is available it is hoped to supply one of the most urgent requirements of the hospital by building a students' residential college in St. Bartholomew's Close, a part of Rahere's original foundation.

But hospitals do not live by buildings and equipment alone; in teaching and research they play a part which is ever growing. There is no need to insist upon the position long held by "Bart.'s" in this field, but only to say that in research its fame has been won in

face of the most serious handicaps. "Endowment of research" is unknown in Smithfield. There is no endowment for any one of the six professorial chairs in the medical college, and there is urgent need for new chairs and readerships in obstetrics, biochemistry, clinical pathology, and bacteriology. It is the ultimate aim of the hospital to establish an institute for research, and to such purposes will be devoted any money which is not absorbed by things more tangible but not more immediate. Meanwhile, the ordinary expenditure of St. Bartholomew's Hospital exceeds its ordinary income by between forty and fifty pounds a day. Here, then, are abundant opportunities for help, not only in the alleviation and cure of disease but in its prevention. To the man in the street the daily work of a great hospital naturally makes the first appeal, but he is beginning to learn that this work is made possible and effective only by labour behind the scenes. The appeal now being made is indirectly for something larger and more momentous even than the modernisation of the world's most historic hospital.

PASTEURISATION AS A MAKESHIFT.

AT a discussion last week in the Comparative Section of the Royal Society of Medicine on improvement in the public milk-supply, Mr. H. W. Steele-Bodger, M.R.C.V.S., contended in a closely reasoned argument that pasteurisation was making milk dangerous instead of safe for consumption. It had been proved, he said, that coliform organisms persisted in pasteurised milk; of 189 samples of pasteurised milk delivered in 15 areas 40 per cent. had been found to exceed the bacterial content allowed by the Ministry of Health, 20 per cent. exceeded it by a large margin. Moreover, the tubercle bacillus was able to survive pasteurisation, though admittedly it was weakened. His own belief was that if the injected guinea-pig were suffered to live for three months instead of six weeks, there would be a much larger proportion of tubercle-positives. The natural bactericidal power of milk appeared to be destroyed at a temperature of 65° C. and efficient sterilisation removed from milk the antiscorbutic vitamin. Pasteurisation carried with it the temptation to submit to the process very dirty milk in the hope that it would thereby be rendered clean; it tackled the problem from the wrong end, glossing over slovenliness in production and supply, and doing nothing to mitigate the grave economic loss caused by the spread of tuberculosis among cattle. If a tithe of the money, thought, and labour spent in treating the ills caused by dirty and diseased milk were spent in preventing these ills and ensuring a quick and clean service of whole milk, the problem would soon be solved. Local authorities were now paying increased attention to the inspection and control of dairies, and Sir George Newman had recently declared that the milk supplied to-day was a different product bacteriologically from that of a few years ago. In 1922 no more than 5 per cent. of producers were supplying milk with less than 10,000 organisms per c.cm., whereas in 1928 nearly 60 per cent. had reached that standard. In the Midlands, especially in Staffordshire, lists were kept of farmers producing good milk, prizes were awarded, and it was a matter of rivalry to occupy a high place on these lists. At contract time farmers who showed lack of enterprise in the production of pure milk lost their jobs, though unfortunately they seemed able to dispose of their inferior milk readily enough in London and elsewhere. If the consumer was determined to get clean raw tubercle-free milk he would get it, but he must realise that for the better article a better price must be paid. He advocated an intensive campaign of public education, for it was not fair that producers should expend large sums on improving their milk if the public did not appreciate what was being done. Lieut.-Colonel E. C. G. Maddock, who followed him, insisted that the actual workers in milk production were keen to do all that was required of them; the type of farm labourer concerned was gradually undergoing a real change for the better. But the grading of milk was most unsatisfactory, as purchasers thought that Grade A was the best milk. If it was agreed to call Grade A the milk of tubercle-free herds which was bottled on the farm the public would then know that buying this grade ensured that the milk was free from the tubercle bacillus. Mr. P. B. Tustin, while agreeing with Mr. Steele-Bodger that no effort should be spared to get milk fresh and in the whole condition, doubted whether the bacterial count gave a clear indication of the condition of the milk. While in Canada, he said, he had a specimen of bottled milk divided into six portions, each of which was sent to a leading bacteriological laboratory with the request that it should be plated at once, notice having been sent beforehand. If his hearers had seen the differences in the reports on the same milk he thought their faith in the accuracy of the test would be shaken. He cited the instance of a cow which had been brought in with a broken leg. After it was rendered unconscious and suspended, pus ran out of the nostrils, and when the carcass was opened up it was found to be riddled with tubercle. Yet that cow bore a tag issued by a qualified veterinarian to the effect that the cow was free from tuberculosis. Experience such as that had caused him to resolve that he would have all the milk for his own use pasteurised while doing everything possible to control production. In Winnipeg, where the quality of milk at one time was very bad, he had seen to it that every supplier of milk had a concrete floor in his stable, with a separate milk house and washroom. Energy was concentrated on the individual workers, and as their standard was raised the milk-supply improved steadily. But milk had to be produced and shipped in large quantities, we were not living in a Utopia, and for the present pasteurisation could not be done without.

OBSCURE FEVERS OF THE TROPICS.

A GREAT deal of work has yet to be done in classifying the short febrile diseases of the Near and Far East. In such a task it is clear that the Royal Army Medical Corps and the Indian Medical Service have exceptional opportunities. An unrivalled clinical field, the necessity for keeping accurate records, and the laboratory facilities now available, have resulted in some definite advances in our knowledge of these tropical fevers of short duration. Such fevers, as we pointed out in a recent annotation (THE LANCET, Sept. 28th, p. 676), may be atypical or abortive attacks of known diseases or due to some agent hitherto unrecognised. In a Report on Short Fevers at Kamptee, Central Province, India,[1] which was compiled with the help of funds from the Director of Medical Services for India, Major R. N. Phease lately described the modern methods of investigating a seasonal outbreak of epidemic fever of unknown origin. As the result of careful inquiry into every possible factor, he showed that what had appeared to be a local fever with special peculiarities was really a mixture of sand-fly and dengue fever. Incidentally, he entirely failed to demonstrate the virus of either disease, and concluded that it is ultramicroscopic—a conclusion in consonance with those of Knowles and Das Gupta in Calcutta, and Young, Richmond, and Brendish at Landikotal. As was briefly reported in our columns at the time, MacArthur, Dudley, and Whittingham,[2] at the International Congress of Military Medicine, read a paper in which they show that there is a clear distinction in the blood picture between phlebotomus or sand-fly fever and dengue on the one hand, and leptospiral infections, such as Weil's disease, on the other. They claim that in an acute fever, provided that the presence of malarial parasites and the spirochæte of relapsing fever has been excluded, a leucopenia with

[1] Jour. of Roy. Army Med. Corps, June, 1929.
[2] Ibid., October, 1929.

a relative increase of large lymphocytes points to phlebotomus fever or dengue, while a leucocytosis accompanied by an absolute and relative increase of polymorphonuclears suggests the Weil's disease group. This leucopenia lasts for the first three to five days, and is followed by a transient leucocytosis. The lowest point of the leucopenia occurs six to nine hours after the onset of the pyrexia, and is a useful aid to early diagnosis. A useful suggestion for further research into these short, unclassified fevers is made by S. Smith,[3] who considers that a group with some such label as S.P.A. ("short pyrexial attack") should be created for medical record purposes, and sent up for special investigation by the A.D.M.S. At present the only "unclassified" complaint which it is permissible to have in the Army is the well-known "P.U.O.," and if a diagnosis of P.U.O. is made, it entails segregation and the whole paraphernalia of investigation as a suspected enteric. Short fevers of other origins, which cannot be classified, have therefore to be labelled after their most prominent symptoms—e.g., constipation, headache, &c.—and thus the records do not show the real nature of the illness.

SHOULD THE GUARDIANS BE TOLD?

SUPPOSE that the members of a board of guardians become aware that the admissions to a hospital under their control include large numbers of cases of "incomplete abortion." Suppose that they invite their medical superintendent to suggest some means for putting a stop to such a state of affairs. Suppose that they even press him to say what steps he is taking to bring the offenders to justice. What is the medical superintendent to do?

The answer depends, as usual, upon the point of view. The point of view of the guardians may not be fixed or certain. Some may be indifferent to the situation; others may regard it as a scandal to be hushed up; others again may demand the utmost publicity. Of these last some may even expect the medical superintendent to cross-examine the patient with all the rigours of the third degree while police-women disguised as nurses make notes of her answers. The point of view of the patient is easier to guess. She may not be vividly conscious of criminal guilt but she will not be anxious for advertisement. She has come to the hospital for treatment, not for persecution; her mental and physical well-being will hardly be improved if she is led to look on the hospital ward as a mere corridor to the assize-court. The medical superintendent himself will probably maintain the point of view of his profession. It is his task, he knows, to save life and to restore health, and for this purpose to win confidence. He will have been trained to remember that it is no part of his duty to act as detective or magistrate, though it is equally not his business to shield a professional abortionist. His dilemma is a difficulty which meets the practitioner in private practice, though hospital experience (for instance when a number of cases are admitted from a particular district) may intensify it. It is the ancient embarrassment of reconciling his duty to the patient with his duty to the public. He will instinctively think of the former while the law will instinctively dwell upon the latter. The point of view of the law will be that the doctor, like any other good citizen, must do his utmost to aid the prevention and detection of crime. Judges have hinted that the doctor should urge the patient to make a written statement, especially if she is likely to die. The law is reluctant to lose a valuable piece of evidence in the always difficult task of bringing an abortionist to justice. In the slightly informal atmosphere of a charge to the grand jury, Mr. Justice Avory once spoke of the moral duty of the medical man to communicate with the police even where the patient was in no danger of death. All criminal trials have their own special facts and that was a case where a woman who had died after an illegal operation had confided to a doctor the name of the abortionist. There is no exact statement of the medical practitioner's duty either in the statute book or in any considered utterance of the Court of Criminal Appeal. No doctor has ever been prosecuted for aiding and abetting criminal abortion by neglecting to cross-examine his patients and to communicate the results to the police. If a doctor thinks fit, and has the opportunity, to urge a patient to make a statement for police purposes, the law will be satisfied and professional confidence will not be infringed. If he does not, the law has no obvious means of punishing him. If he makes the effort and fails, he need do no more. If the patient confides to him the name of the abortionist, it by no means follows that she authorises him to pass the statement on, though she may perhaps be the more readily persuaded to give that authority. If she makes no statement at all, the doctor is not compelled to convey mere suspicions to the police. The policeman's primary duty is to catch the criminal; the doctor's primary duty is to attend to his patient.

The position of the medical superintendent facing guardians who conceive that there is some easy short cut through these difficulties is not entirely imaginary. One such officer, hard driven by the members of his board, protested with dignity against the unfairness of expecting him to deal publicly with these matters and was finally driven to say that, unless he had some guarantee against such insistent pressure, he must decline to attend the meeting of the board. The wisdom and firmness of his attitude will be applauded.

[3] Jour. of Roy. Army Med. Corps, June, 1929.

MEDICAL PRACTICE BY FOREIGNERS IN GREAT BRITAIN AND IRELAND.

THE proposed International Convention on the Treatment of Foreigners has led the Privy Council to inquire of the General Medical Council what conditions are imposed on foreigners who wish to practise medicine or dentistry in Great Britain or Ireland. A memorandum by the Registrar states in reply that neither the General Medical Council nor the Dental Board has ever been concerned with the nationality of persons applying for registration in the Medical or Dentists Registers. If a practitioner applies who possesses a qualification entitling him to registration, the Council would register him. It may be that the applicant does not desire to come to this country but seeks registration in order that he may be able to obtain registration in British Dominions and Possessions in which registration, or eligibility for registration, in Great Britain and Ireland is an essential requirement. If the applicant desires to reside and practise in this country, it is assumed that the prescribed requirements in regard to the residence of aliens in this country have been complied with, and the Council makes no inquiries in regard to this. The fact that an applicant for registration possessed a recognised diploma would not, so far as the Council and Dental Board are concerned, be held to override any regulations which might be in force relating to the admission of aliens to this country. With regard to changes of name in the Medical and Dentists Registers, however, in the case of persons who are not British subjects applications are not acceded to unless a deed poll is supplied which has been enrolled in the Supreme Court. If this is done it is assumed that the change has official sanction and the application is usually acceded to. The memorandum goes on to point out that unregistered persons are not prohibited from practising medicine in this country though they are under certain disabilities; they cannot, for instance, hold any public medical appointment, they cannot give any valid certificate required under any Act of Parliament, and they cannot obtain dangerous drugs, or assume any title implying registration as legally qualified practitioners. Apart from this they have entire freedom of practice. Moreover, persons who are not British subjects and who have obtained from a foreign university a degree of doctor in medicine, and are

entitled to practise in their own country, may act as resident physician or medical officer of any hospital established exclusively for the relief of foreigners in sickness, provided they are not engaged in medical practice except in this way. This is the position in regard to medicine. Unregistered persons, on the other hand, are entirely prohibited from practising dentistry in this country.

CARBON MONOXIDE POISONING.

A NUMBER of readers must have been shocked when they saw the account of a recent inquest on two men who had died in the back of a saloon motor-car which was stuck in a water-splash. It was obvious to anyone familiar with carbon monoxide poisoning that the men had met their death from inhaling exhaust fumes, yet the coroner's jury brought in a verdict of death from misadventure—exposure to the elements. Two doctors attended the post-mortem examination and one of them—who was not well received by the coroner—very properly pointed out the peculiar pinkness of the blood which is so characteristic in victims of monoxide poisoning. The opinion of the other doctor, however, prevailed and the coroner and the jury were satisfied that two ordinary healthy men who had drunk no more than a pint or two of beer could meet their death seated in a closed saloon, with windows shut, through sitting for about a quarter of an hour with their feet wet. This verdict involved for the unfortunate driver of the car a committal for being drunk in charge of a motor vehicle. Owing apparently to the fact that the windows beside him were open he escaped with his life, after a period of severe poisoning which the police, not unnaturally perhaps, interpreted as alcoholic intoxication. Happily Prof. J. S. Haldane and Dr. Leonard Hill were among the readers of the report of the inquest and immediately realised that a serious miscarriage of justice was likely to arise. They offered themselves as witnesses for the defence and the case against the driver was dismissed.

It is obvious that the signs and dangers of carbon monoxide poisoning are by no means fully appreciated even by the medical profession and still less by the public. There was considerable discussion at another recent inquest (the *Times*, Nov. 28th) about the cause of the death of two people found in a bathroom in Carshalton. The strong evidence of Dr. Roche Lynch, however, was able in this case to convince the court that carbon monoxide must have been the cause. Dr. Hill wrote to the *Times* on the following day drawing attention once more to the risks of running an engine in a closed garage and in tunnels. The events in the case of the saloon trapped in the splash were very similar to those which occur when an engine is run in a garage. The outlet of the exhaust was under water; the driver raced his engine in the effort to drive the car out, and either a leak in the exhaust and silencer let carbon monoxide through into the body of the vehicle or the gas bubbled vertically up from the end of the pipe. The fact that the men had taken beer intensified the action of the gas in producing anoxæmia, but the fumes may well have contained 15 per cent. of monoxide, a concentration which would poison the sober and vigorous. The most recent work on carbon monoxide poisoning appears in the form of two papers by Dr. J. Argyll Campbell[1] from the National Institute for Medical Research, Hampstead. He stresses the striking resemblance between the physiological and pathological effects of carbon monoxide poisoning, of exposure to low oxygen pressure in the air, of hæmolysis, and of hæmorrhage. This supports Haldane's original view that carbon monoxide is not in itself a tissue poison, but acts simply by interfering with the oxygen supply to the tissues. The cause of death is heart failure, and the power to tolerate an atmosphere containing a good deal of the gas depends upon the ability of the vital organs to function under a low tissue oxygen tension. The classical account of the symptoms of oxygen want has been supplied by Prof. Haldane, who describes nausea, vomiting, rapid breathing, periodic respiration, headache, visual disturbance, irrational states, and finally coma and cardiac failure. It is easy to see that such symptoms in a man smelling of alcohol would very naturally be diagnosed as drunkenness by the police. The irrational states would add support to their view; those who have read Prof. Haldane's story will remember how he had to be dragged out of his exhaust chamber on the point of collapse, but still protesting vigorously that he was perfectly well.

Another serious question arises when the effects of chronic oxygen starvation are considered. Dr. Campbell's researches have been particularly directed towards chronic poisoning by carbon monoxide, and it is known that people who are continually starved of oxygen may suffer severe and even permanent damage to their circulatory, urinary, and nervous systems without being aware that anything is happening to them. Workers in garages and confined spaces where internal combustion engines are constantly running may be exposed to this risk. More research is needed to give us a definite statement about the chronic form of poisoning, but it cannot be too strongly emphasised or too widely known that death from acute carbon monoxide poisoning may occur in bathrooms where the geyser has no vent pipe, in sheds where an engine is running without free access to the air, or even in a closed car on the road if there is any leak in the exhaust pipe under the body; that one part in a thousand parts of air is a deadly mixture, that the poison is insidious and gives no warning whatever, and that the symptoms of partial poisoning strongly resemble those of alcohol. As Dr. Hill suggests in the *Times*, these facts should be taught to all first-aid classes and they should most certainly be familiar to every doctor.

[1] Brit. Jour. Exper. Path., October, 1929, p. 304; Jour. Physiol., 1929, lxviii., 81.

DRAINAGE AFTER CHOLECYSTECTOMY.

AFTER the operation of cholecystectomy, the absence of any inflammatory reaction, a dry field, and the fact that the cystic duct has been ligatured securely, tempt the surgeon to close the abdominal wound completely. The disadvantages of drainage are a possible slight increase in the duration of convalescence, the risk, though admittedly a slight one, of a ventral hernia, and the production of an unsightly scar from puckering at the site of drainage. Against these rather trivial considerations have to be set off the risks of a collection of blood in the region of Morrison's pouch, most real in those cases where operation has been carried out in the presence of acute inflammation, and the grave tendency of such collections to become infected. Moreover, quite apart from hæmorrhage, a considerable quantity of bile may drain from the wound; this may be due to inadequate ligature of the cystic duct, but is in many cases, as E. R. Flint has shown, undoubtedly due to the section of accessory hepatic ducts, which are often insignificant and difficult to find or secure, even if their presence is suspected. John A. Wolfer[1] has recently published an interesting experimental study of his results, following cholecystectomy in the dog. His work shows clearly how healing of the ligatured stump of the cystic duct is encouraged by the formation round it of organising exudate. The actual site of ligature separates by aseptic necrosis without any obliterate process taking place within the lumen, and therefore, in the absence of organising exudate around the site of ligature, leakage is inevitable. In the dog, at any rate, drainage seems to interfere with the formation of fibrin round the stump, and leakage is more prone to occur where drainage is provided. Wolfer stresses the inadvisability of

[1] Surg., Gyn., and Obstet., October, 1929, p. 462.

extensive stripping of the cystic duct, proximal to the site of ligature, since deprivation of its blood-supply is the result, causing further delay in healing. The separation of the ligatured stump occurs about the fifth day, and at this time the strain of coughing or vomiting is sufficient to cause leakage of bile in the absence of a protective cap of fibrin. He points out that, if a drain is used in the ordinary way for approximately 72 hours, there is little chance of fibrin collecting round the stump at the end of this period, and advises that, if a drain is inserted, it should be placed well away from the site of ligature; in practice this is usually done as a matter of convenience. Most surgeons find the risks of oozing and of possible damage to accessory ducts so serious that drainage after cholecystectomy is likely to remain in vogue. Any leakage of bile, if it occurs, is purely transitory, and if not actually beneficial, is certainly harmless.

THE DRUG TRAFFIC.

A GREAT step forward in the control of the illicit drug traffic was undoubtedly taken when the Treaty of Versailles was made to include ratification of the Hague Conventions of 1912 and 1914, and the League of Nations shouldered the burden of investigating and controlling opium, cocaine, and their derivatives. Nevertheless, the problem remains a very grave one. The world's annual production of opium is about 8000 tons, and it has been estimated that not more than 20 tons are absorbed in medical, scientific, and other legitimate uses. The revolution in China introduced a new difficulty, for the weakened central government is quite unable to put down the revived poppy-growing industry which in 1913 had been completely eradicated. Moreover, a number of States still obtain a large part of their revenue from the sale of these drugs, and they cannot balance their budgets if this source of income is suddenly cut off. The smoking or eating of opium is an ancient habit in many parts of the East and is as difficult to put down as any other time-honoured national custom. Nowadays, moreover, there is a new aspect of the problem—namely, the trade in manufactured products of opium and cocaine, and the gradual invasion of the West by the drug habit. No commodity is easier to smuggle than heroin or cocaine, and the trade is said to be controlled by an international gang with tremendous capital and power.

Two discussions on the subject have taken place in London recently: a conference of the Women's International League on Nov. 14th, and a meeting of the Medico-Legal Society on the 28th. The general opinion of the conference was that nationalisation would prove the only solution of the difficulty. The drug traffic cannot be controlled so long as there is an enormous surplus over and above legitimate needs; the supply must be cut off at the source. To do this production and manufacture must be taken out of the hands of private individuals and made a government monopoly. This was Viscount Cecil's proposal, and it has also been recommended, as Mr. F. Llewellyn Jones told the members of the Medico-Legal Society, by the League of Nations. The conference promoted by the Advisory Committee to the League, appointed in 1920, resulted in an agreement whereby the eight conferring nations—the British Empire, China, France, India, Japan, the Netherlands, Portugal, and Siam—undertook to suppress entirely the consumption of prepared opium in their territories in 15 years from the time when the poppy-growing countries prevented the exportation of raw opium. They recommended that the importation and sale of opium should be entirely a government monopoly.

Great Britain is as advanced, perhaps, as any other country in the control of these drugs. We have passed the Dangerous Drugs Act, 1920, and thereby put our own house in order. One or two voices were raised at the Medico-Legal Society to protest that this Act had introduced tiresome and vexatious restrictions on the legitimate use of morphia and its derivatives, and that the poor were suffering from inability to obtain morphia for the relief of incurable pain. According to our Paris correspondent [1] this is what is happening in France, where "some chemists actually prefer not to stock morphia at all, in order to avoid the annoyance of inspection." On the whole, however, it seems pretty generally agreed that in this country the honest doctor and the honest chemist can prescribe and dispense these drugs without fear or interference. All restrictions are annoying, but they are accepted cheerfully when they constitute a legitimate safeguard, and those who have heard the histories of drug victims or have seen for themselves the effects of cocaine and heroin on individuals or nations will be ready to welcome any reasonable system of control which will break up the trade. Only eight countries are concerned in the manufacture of these drugs, and the League has hopes of improving the situation by persuading each of them to limit its production to a definite quota of the world's legitimate requirements.

TRAUMATIC OCCLUSION.

SOME of the recent work on traumatic occlusion done by Dr. B. Gottlieb and his school in Vienna was reported to the Odontological Section of the Royal Society of Medicine on Nov. 25th by Dr. E. W. Fish. Gottlieb's experiments, he said, consist primarily in placing metal caps on one or two of the teeth of a dog to increase and modify the masticating strain on them. Sections prepared from the jaws of the animals after the caps had been worn for varying lengths of time showed the effect on the teeth and surrounding tissues. In no case was absorption of the cementum observed but the bone was absorbed on the pressure side of the tooth and deposited along the stretched fibres of the periodontal membrane on the side of traction. When the pressure was excessive the periodontal membrane was destroyed and the tooth came in contact with bone. In such cases the bone was absorbed by being undermined and was not absorbed from the surface which came in contact with the tooth. The destruction of the periodontal membrane in these cases has a bearing, said Dr. Fish, on the association of pyorrhoea with traumatic occlusion.

In the discussion which followed, Mr. F. N. Doubleday suggested that the development of sepsis round the metal caps might have some bearing on the destruction of the periodontal tissues. He thought it important to define the term "traumatic occlusion" and hoped some method would be devised for measuring the forces involved. Mr. J. G. Turner was of opinion that an intermittent pressure such as there is in traumatic occlusion would tend to produce hypertrophy and that absorption would occur only under a constant pressure.

THE DISTRIBUTION OF SICKNESS.

THE study of the causes of invalidity is indeed difficult. First we are faced with the apparent anomaly that the sickness-rates of a community increase as its health improves—because a healthy community contains a large proportion of old people. For years now the general mortality-rate has been falling, and the upward trend of sickness has been correspondingly continuous. How far the decline in the mortality-rate has to go before a decline in the sickness-rate appears no one has yet discovered. Secondly we have to remember that sickness is hard to define; the attack of lumbago which may withhold a miner from his work at the coal face may not keep a cobbler from his last or a clerk from the office stool. Hence heavy occupations, although possibly otherwise health-giving, tend to experience sickness-

[1] THE LANCET, Nov. 23rd, p. 1111.

rates heavy in proportion to the occupational mortality. Sir Thomas Neill, who lately reminded us of some of these matters in a presidential address to the national congress of industrial assurance approved societies, has pointed out that climate exerts a powerful influence and quoted the case of men employed in building and engineering construction with exposure to weather. According to the *Times* of Nov. 26th, he said that the average duration of a claim in an area in the north of England was considerably longer than that of a claim in the south of England, as was illustrated by the following table :—

Cause of incapacity.	Excess per cent. of northern area over southern.
Rheumatism	50
Nervous and mental disorders	41
Skin diseases	14
Digestive disorders	21
Respiratory disorders	43
Microbic fevers	38
Accidents	32
All causes	36

Sir Thomas referred also to certain anomalies, as when a clerical worker of a given age in one part of the country has a longer sickness claim than a clerical worker of the same age and sex in another part; and when a woman factory worker in one area suffering from digestive disorder remains longer on the funds than a woman factory worker in another area incapacitated by a similar trouble. Since the industrial population loses every year something between 23 and 24 million weeks' work in England and Wales, study of this enormous economic and social loss is worth while. It is receiving attention from the Industrial Health Research Board, which has already carried out several intensive investigations in cotton-weaving, printing, cotton-spinning, and coal-mining.[1] It has been found that printers suffer most disablement from diseases of the nervous system, and weavers of Lancashire from diseases of the digestive system, which, like other causes of sickness, are particularly high among married weavers. The existence in the total volume of sickness of a substantial proportion of psychoneurotic complaints introduces additional complexity. This group grows when the conditions of life and of work are unfavourable. For example, it was found that coal-miners when working in deep and hot mines experienced more short-time sickness than miners doing similar work in cooler places, but invalidity of long duration was the same for both groups. Miners with similar degrees of slight incapacity not unnaturally have a greater tendency to stay at home when they work under unpleasant conditions. Now that sickness has become so much a financial responsibility and a charge upon industry and the State, efforts must ever be increased to study its causation and its prevention. At present the whole subject bristles with difficulty, and there can be little wonder that the medical sociologist turns from sickness-rates in despair to mortality records, comforting himself with the thought that stone dead knows no fellow.

THE ROCKEFELLER FOUNDATION.

The work of the Rockefeller Foundation is interesting both because it is international and because it is surprisingly polymorphic. The latest report[2] shows progress in many kinds of research. One of the aims is that no worker should be placed in the field until he has had some training in the work to be undertaken, and to this end advice and assistance have been given to medical schools and to nursing and public health training institutions all over the world. At the request of governmental authorities the International Health Division will send representatives to advise on methods of prevention of disease and to assist in the organisation of public health programmes. Financial assistance is usually given only on a small scale so that its withdrawal does not cripple the scheme which it has helped to create. Limitation of activities to the fields described has been found to be necessary, but these are already so wide that a large staff is required to carry on the work involved. Originally, when the Foundation was established in 1913, much attention was devoted to hookworm disease, with incidence surveys and preventive campaigns. Subsequently a similar attack on malaria was undertaken, and in order to further these projects official departments were formed in the countries involved. These departments have since taken over more generalised public health work. More recently the efforts of the Foundation have been directed towards the prevention of yellow fever, and the report includes a description of the methods employed. In North Brazil a representative of the Foundation worked last year in coöperation with the Brazilian Rural Health Service. Antilarval measures were taken at once, and householders were encouraged to realise their responsibility in the prevention of breeding of the yellow fever mosquito, *Aëdes aegypti*. In the absence of a piped water-supply covered water-jars were used, and the number of vessels for each household was reduced to a minimum. Inspections of gutters and drains were instituted. It was believed that by control of the disease in the large coastal cities cases in the less densely populated interior would gradually disappear, a similar plan having been pursued with success in Ecuador, Mexico, and Central America. Unfortunately, however, the transport facilities between the interior towns were such that the disease was continually being carried to non-immune persons, and so persisted. The Foundation is, therefore, to coöperate with the National Department of Public Health of Brazil to extend antilarval work to some of the large interior towns of Northern Brazil. A laboratory was established at São Salvador, and experiments performed which go to show that an attack of Brazilian yellow fever protects against the African virus. It was to study the identity of American and African yellow fever that Hideyo Noguchi went to West Africa during the early months of 1928. He lost his life in the course of work at Accra, on the Gold Coast, while the West African Commission had its headquarters at Lagos. Here experiments were successfully carried out to determine the period of extrinsic incubation—that is to say, the interval between the infecting meal and the time when the aëdes mosquito can transmit the disease by its bite—a period now definitely fixed at 9 to 12 days. Further work undertaken included the determination of the species of mosquito, which are capable of transmitting the disease, and experiments on the protective value of convalescent serum. A laboratory for experimental comparison of the different strains of virus has been established at New York.

ELSEWHERE in this issue it is announced that Lieut.-Colonel W. P. MacArthur has been appointed Consulting Physician to the British Army.

THE sudden death is announced from Perth, Western Australia, of the Hon. Athelstan John Henton Saw, Chancellor of the University of Western Australia. Dr. Saw, who graduated in medicine at Cambridge in 1894, was 61 years of age.

AT the recent election of Direct Representatives on the General Medical Council, Dr. H. B. Brackenbury received 12,563 votes, Mr. N. Bishop Harman 11,948 votes, and Dr. Arthur Haydon 2019 votes. Dr. Brackenbury and Mr. Harman were accordingly elected.

[1] A. B. Hill: An Investigation of Sickness in Various Industrial Occupations, Jour. Roy. Statist. Soc., 1929, vol. xcii., Part II.

[2] Copies of this report may be had without charge from the Rockefeller Foundation, 61, Broadway, New York.

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LV.

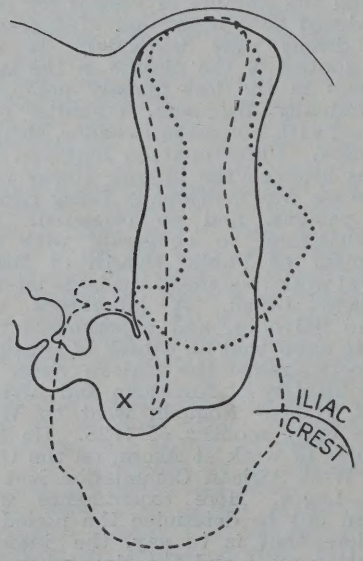
INTERPRETATION OF RADIOGRAMS OF THE ALIMENTARY TRACT.

PART II.*—THE STOMACH.

THE length of the stomach varies; moreover, it has no fixed points. It is merely suspended at either end—i.e., (1) where the œsophagus emerges through the diaphragm and (2) where the junction of the first and second parts of the duodenum is attached; this is the point where the two layers of peritoneum that completely surround the stomach and first part of the duodenum separate, forming the hepatoduodenal ligament and leaving the posterior wall bare. Between these two relatively fixed points the stomach hangs and, according to the length of stomach that lies between them, we have widely different forms that have been described as "J," "cow's horn," "fish-hoop" shaped, "gastroptotic," and so forth. Moreover, in the living subject the anatomical position of the attachment of the duodenum is far from being a fixed point. It varies within fairly wide limits in the normal subject and is, moreover, capable of moving an inch or more on palpation. On one occasion I actually manipulated this part of the duodenum across the middle line to the region of the hilus of the left kidney. Little wonder then that we have such very wide variations in the appearance of stomachs which function normally. It does not materially help us to classify them into hypertonic, sthenic, and hypotonic varieties. If we can gain a living conception of a living organ, that is what we need; no one picture can represent the normal.

The recognition of the possible divergencies that occur within the normal is fundamental (Fig. 6). Inexperienced radiologists, like inexperienced clinicians, will always tend to regard every departure from their conception of the normal as a pathological condition and attribute to it symptoms for which it is in no way responsible. The stomach that extends well below the umbilicus is not necessarily pathological, nor are we justified in speaking of "gastroptosis" on this account. Tall, thin women particularly have this long type of stomach that, in the upright position, extends well below the so-called normal level, corresponding approximately to the umbilicus (4th to 5th L.V.) (Fig. 7). Such stomachs are not necessarily associated with symptoms any more than the short, hypertonic type (Fig. 8) met with in the short, dumpy muscular man that extends only to, say, two inches above the umbilicus. Such variations are not likely to give rise to symptoms except from mechanical causes. Chief among these is the possibility of drag upon the duodenal attachments, a condition that is not always easy to recognise, and is often associated with typical duodenal symptoms, and even with duodenal ulceration. The normal level of the highest part of the duodenum is about the 2nd and 3rd L.V., and if it retains this position when the stomach extends to, say, three or four inches below the umbilicus—that is, well into the pelvis—then we are likely to get drag. But in the case of patients with low stomachs who have no symptoms, we often find that the attachments have allowed the duodenum to come down to perhaps below the level of the crest of the ilium—4th to 5th L.V. Presumably this is why they are free from symptoms. Gastroptosis, of course, exists, especially as a mani-

FIG. 6.

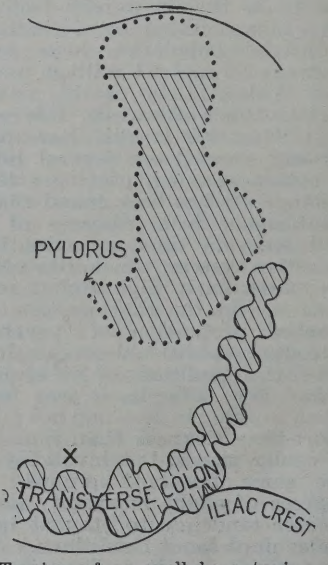


This diagram represents superimposed tracings of three stomachs that were regarded as normal. They are all common types. We are inclined to call the one represented by the continuous line normal, that by the dotted line hypertonic, and that by the broken line as the long type—it is not hypotonic (atonic), since the tone is perfect, nor does it indicate gastroptosis; it is simply a long type of normal stomach.

FIG. 7.

Normal long type of stomach, extending 4 or 5 inches below the crest of the ilium. Note the rugæ showing in the upper part of the stomach. The duodenal cap (A) is rounded, directed upwards, and its attachments have allowed it to drop and adjust itself to the low position of the stomach.

FIG. 8.



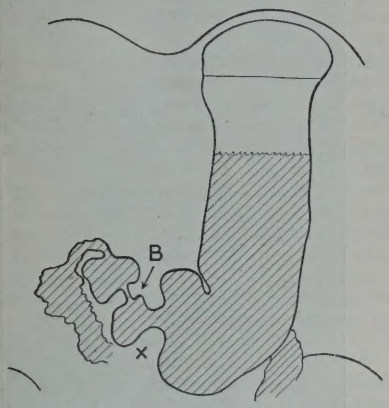
Tracing of a small hypertonic stomach. Not only is the lower border of the stomach high, but the transverse colon is drawn up to the level of the iliac crest. In this figure and the following ones X indicates umbilicus.

* Part I., The Œsophagus, appeared last week. The Duodenum and Intestines will be dealt with in future issues.

festation of Glénard's disease, but the symptoms do not apparently arise from the gastric displacement per se. This subject is dealt with in a most complete and masterly way by H. Bedingfield in the *Quarterly Journal of Medicine* for July and October, 1929. The literature surveyed and analysed covers over 600 references.

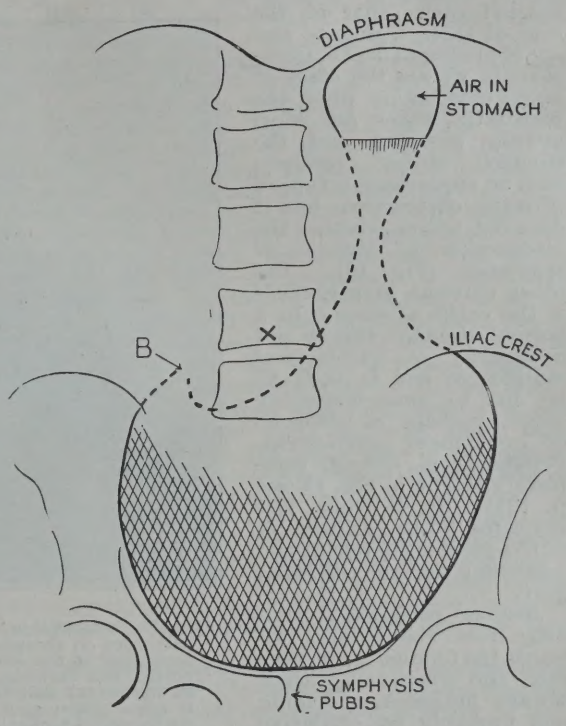
As to function, we have very few guiding points. *Hypersecretion* (Fig. 9) can be recognised by the accumulation of non-opaque fluid above the opaque meal, provided, of course, that the meal has been so made that the barium salt in it has not settled out. By giving an ounce of saturated solution of sodium bicarbonate we can roughly gauge the quantity of free acid in this secretion from the amount of CO_2 evolved. Very active hypersecretion that is apparently unduly acid is often associated with ulceration close to the pylorus. Secretion that is deficient in free acids is not necessarily associated with carcinoma, but,

FIG. 9.



Tracing of a film to show hypersecretion. Note that the secretion poured out rises to the top of the heavy opaque food, leaving a non-opaque space between the air space and the contrast meal. On giving Na_2CO_3 the air space will increase by ½ inch or more if the secretion contains abundant free acid. The long pyloric canal (B) suggests the possibility of a pyloric ulcer, a condition in which hypersecretion is often seen. The appearance of hypersecretion is exactly simulated by an opaque meal which is not adequately suspended and rapidly settles down. Apart from hypersecretion and the long pylorus, the stomach is normal.

FIG. 11.



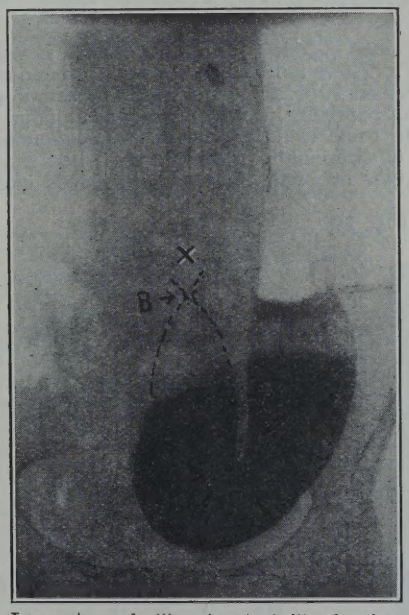
Tracing from a case of extreme old-standing pyloric obstruction. The stomach shows a line of retained fluid or secretion below the air space in the fundus. The lower border shows a crescentic outline that marches with the symphysis and rami of the pubis. No trace of peristalsis is seen. B = pylorus.

FIG. 10.

Very abnormally active peristalsis of the stomach, associated with a small ulcer near the pylorus that was eventually detected by palpation methods. Patient recumbent—the fundus is filled with opaque food.

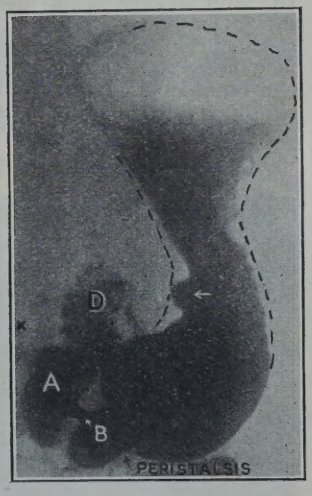
in my experience, is not met with in ulceration, so that this sodium bicarbonate test is of some value. *Peristalsis* is very variable and, apart from extremes, little reliance can be

FIG. 12.



Long stomach ("gastroptosis"), showing result of air swallowing. Stomach maintains its tone, yet extends almost to the symphysis pubis. The patient is an air swallower, and the air extends down the stomach to the level of the iliac crest. Below this is a layer of fluid —secretion or retained food. The opaque food lies in the lower part and does not fill the pars pylorica. There is no information from the picture as to whether the duodenum has come down or not. Probably it has, or there would have been a large residue of retained food in so marked a case. B indicates the probable position of the pylorus.

FIG. 13.



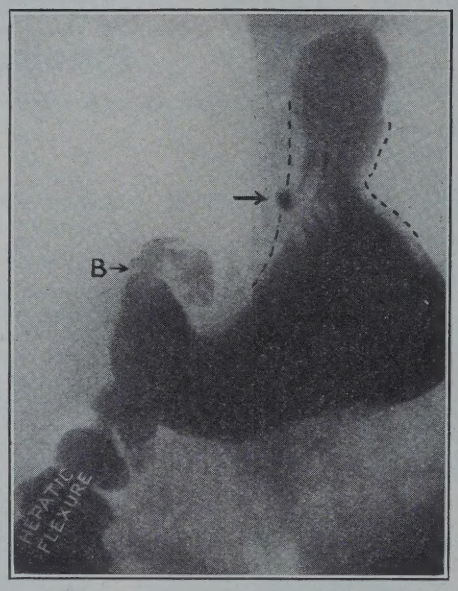
Large ulcer on lesser curve. The dotted line indicates the probable outline of the stomach wall, and suggests thickening of the mucous membrane about the ulcer. There is a wave of peristalsis close to the pylorus, and the duodenal cap is well filled. Note how the food is divided up in the duodenum as soon as it has left the "cap." The duodeno-jejunal flexure (D) is also seen. Patient standing.

placed upon it as a diagnostic point. Normally the waves succeed each other at the rate of three a minute and are of moderate depth. Occasionally we see the stage of acute obstruction when the peristaltic waves are enormously powerful and the stomach almost writhes; such an appearance is typical of acute obstruction, but it does not tell us whether the obstruction is organic or spasmodic (Fig. 10). The other extreme in peristalsis is the entire absence. In a normal stomach this is not necessarily of pathological significance and is likely to be due to some transitory cause, perhaps a headache or even mere nervousness. Peristalsis is almost completely absent in Fig. 12 (see p. 1211). It is only just indicated by the drawing in of the greater curvature and narrowing towards the lower part.

Reverse peristalsis, running from the pylorus towards the fundus, is not very rare, and when met with it always indicates a definite and probably an extensive lesion near the pylorus, usually on the lesser curve.

The *retention of a residue of food* in the stomach always tends to sag the stomach down, and this in turn makes it more difficult for the organ to empty itself. In such cases the tone becomes deficient and the food all sags to the lowest part. There is little or no attempt to maintain the normal tubular form against the action of gravity. The resulting picture is a crescentric shadow of opaque food well below the umbilicus. If on the outline of this shadow we see no evidence of peristaltic waves, or even more important, if we see a series of waves of diminishing intensity followed by a period of rest, we know that we are dealing with a case of definite *pyloric obstruction* (Fig. 11).

FIG. 14.



Chronic "penetrating" ulcer near the lesser curvature on the posterior wall. Note the puckering of the mucous membrane. The dotted line indicates the probable outline of the actual wall of the stomach. There is some spasm and consequent hour-glass contraction—probably no organic narrowing. The raggedness of the greater curvature near the narrowing is due to folding of the mucous membrane. The ragged filling defect at the lowest part is due to pressure that has been employed to fill up the crater by manipulation, and the opaque food has not come back into it. Patient lying down and rotated so as to bring the ulcer crater on to the profile of the shadow. B = pylorus.

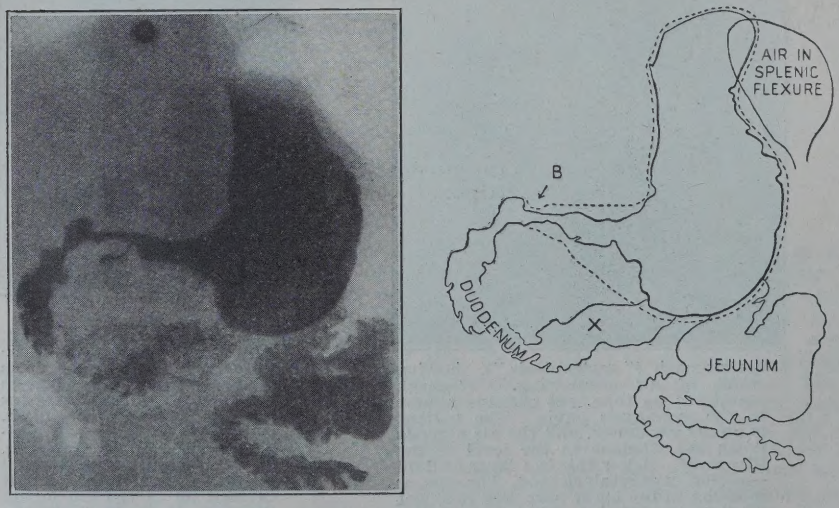
FIG. 15.

Ulcer on lesser curvature. Note the suggested thickening of the surrounding mucous membrane. The greater curve is ragged, owing partly to the irregularity of the mucosa, but chiefly because it is only partially filled—there is some atony and the food is sagging to the lowest part, leaving the upper half partially filled. The cone shape of the ulcer suggests that the ulcer is healing. The dotted outline indicates the probable outline of the stomach wall. A = duodenum.

Air swallowing with the food is, up to a point, normal, but in certain patients, particularly nervous women, it is excessive, resulting in an accumulation of air in the stomach that is usually brought up with violent and noisy eructation. The patient is quite unconscious of what she is doing and imagines she is generating all this air in the stomach. In such a subject, if we mention that she has air in the stomach and instruct her to bring it up, we see the enlarged air space suddenly diminish, and more often than not, immediately enlarge—she has swallowed more air. Sometimes one can get the patient to distend the stomach with air until the clear area stretches to the level of the umbilicus (Fig. 12). It is an unpleasantly noisy and offensive neurosis that is easily cured by preventing swallowing; one cannot swallow unless the mouth is closed and a cork between the back teeth has brought relief to many.

Air sucking is a different and more complex story that depends on diaphragmatic action chiefly and its treatment in men, as in horses, is as yet unsolved.

FIG. 16.



Growth at the pyloric end of the stomach, probably extending to the duodenum. The dotted outline suggests the true outline of the outside of the stomach wall—the opaque food gives the inner outline only. By palpation we can usually determine the extent of such a growth, and also whether it is adherent. B = probable position of the pylorus.

Rapid emptying of the stomach is noted in association with many conditions, hunger, persistence of purgative action, irritative lesions of any part of the tract—quite often without any obvious cause. But when we note rapid emptying at the beginning of digestion and yet find that there is an appreciable residue of the five-hour meal there are several sites that are at once laid under suspicion—i.e., the gall-bladder, the pylorus, and the appendix.

Delay in emptying, retention of a residue beyond the five-hour interval does not necessarily indicate a lesion at the pylorus or duodenum, or elsewhere for that matter. There are numerous causes that are possible—e.g., headaches, nervousness, gall bladder or appendix trouble, &c., but unless some satisfactory explanation is forthcoming, the observer should confirm the observation and, if it is still present, he should insistently search the pyloric region for the slightest suggestion of the crater of an ulcer.

Gastric Ulcer.

The diagnosis of gastric ulcer is now always made on direct evidence and there should be very few mistakes. The indirect evidence, the formation of an hour-glass contraction due to spasm, although of value in directing our attention and focusing our palpation efforts to show the crater, is of itself not of very first-rate importance, owing to the possibility of such conditions being reflex. The direct evidence consists of the demonstration of the filling of the pocket of the ulcer, and it is surprising what very small ulcers can be demonstrated by a radiologist who is skilled in palpation. It is essential for this purpose that the first mouthful of opaque food to enter the *empty* stomach should be a very thick cream of almost pure barium sulphate. The radiologist should palpate and manipulate this food as it canalises the empty stomach in such a way that he outlines all the folds of the rugæ, pushing the food up and down between them, and eventually allowing it to come right down to the pylorus. It sounds easy, but in practice it is often an extremely difficult manipulation, particularly when the abdominal wall is powerful. Moreover, the radiologist must be extremely careful in the control of the illuminated area, otherwise his hand will be unduly exposed to radiations and eventually he will suffer. It is often necessary to palpate in this way both in the upright and in the supine positions, for it is only in this position that we can satisfactorily fill the cardiac end of the stomach where, fortunately, ulceration is comparatively rare.

The most difficult part of the stomach in which to demonstrate an ulcer crater is the pyloric antrum, and very frequently it requires persistence and the exercise of considerable physical power in order to obtain the necessary information. Occasionally in the presence of florid, flat ulceration near the pylorus it is impossible to demonstrate any abnormality.

When the palpation of the first mouthful has been carried out, more food—about half a pint—is given, and the profile of the shadow searched by turning the patient round. In this way the niche of an ulcer that has been demonstrated by the palpation method can be brought onto the edge of the shadow and a radiographic record of it obtained. It is often extremely difficult, if not impossible, to obtain a satisfactory film to show the pocket of a small ulcer; some of these can only be demonstrated by the palpation method.

The nature of an ulcer that is shown on an X ray film is open to question (Figs. 13, 14, 15). What looks like a large ulcer penetrating right through the wall of the stomach is not necessarily a very deep one, for the mucous membrane around the ulcer appears to be heaped up, forming a large crater. The result is that the pocket gives the appearance of being very much deeper than it actually is. The smallest ulcer that I have seen excised measured only an eighth of an inch and hardly involved the whole thickness of the mucous membrane; yet the pocket that it produced, and which I filled by palpation, must have been ¼ or more an inch in diameter, and knowing where to look for it, I could obtain quite a definite projection on the outline of the shadow when the stomach was filled. The only point I know of as a guide to the actual depth of an ulcer is the information one can obtain from palpation. If we can determine that the ulcer base is fixed, we can assume that it has involved the peritoneal coat and become adherent. Sometimes the pocket of the ulcer is so deep that a bubble of air is trapped above the opaque food. Yet even in these cases it does not follow that the ulcer is a true penetrating one—some of these ulcers when excised have shown no suggestion of penetration but merely involvement down to the muscular layer, which was infiltrated and almost cartilaginous. The X ray appearance of penetration must therefore be due to the heaping up of the mucous membrane. The healing of an ulcer can be watched and the manner in which it becomes smaller noted. As it heals, the niche becomes conical—a conical crater very strongly suggests a healing ulcer.

The old-standing ulcer with cicatrisation is now comparatively seldom seen, although these cases were very common in the early days of the opaque meal. An hour-glass contraction is formed and on palpation it is usually possible to find the crater of the ulcer if it is still active. Spasm enters into these contractions to a very large extent, and it is impossible to foretell what degree of narrowing will be found in the operating theatre. It is, however, nearly always far less marked than one would expect from the X ray appearances, since spasm invariably plays a large part.

It is the ulcers near the pylorus on the lesser curvature that are most difficult to diagnose. Delay in emptying of the five-hour meal, intermittent activity of peristalsis, hypersecretion which seems to be abnormally acid, and perhaps a tender point on palpation should always tend to make the radiologist extremely careful and thorough in his detailed examination of the pyloric antrum. Minute ulcers in the pyloric canal are sometimes met with. In addition to one or more of the above signposts, a pyloric canal that appears to be longer than normal will suggest a very careful search for the crater. Unless we can demonstrate the crater, we may suspect the presence of an ulcer but we cannot make a definite diagnosis. Pain on applying pressure to the site of the ulcer is sometimes very definite; quite as often, there is no suggestion that the ulcer is sensitive to pressure, but what determines this is quite unexplained.

Diverticula of the stomach may occur at any point on the lesser curvature. They are rare and the appearances are those of a deep "penetrating" type of ulcer.

New Growths.

The diagnosis of new growths proceeds on the same lines as those employed for the detection of ulcers, but the resulting X ray picture is exactly the reverse—namely, instead of the food-filled pocket produced by an ulcer we have the displacement of the opaque food by the growth, a filling defect (Fig. 16), or a notch. In our palpation of the first mouthful as it canalises the empty stomach, we will probably note deformity of the ordered channels of the rugæ running in the length of the stomach, and displacement of the opaque food. In palpating we may detect resistance due to the growth, and by manipulation we attempt to discover whether or not there is undue fixation—infiltration of the growth into surrounding tissues. A large growth presents no difficulty in diagnosis, but the early growth is often almost, if not quite, impossible to diagnose. A curious and unexplained feature of growths is the fact that the stomach tends to empty rapidly. Note the way in which the second and third parts of the duodenum are shown in Fig. 16; this is due to rapid emptying and consequent overloading. A plaque of growth in the wall, even if it does not cause any filling defect, may cause an interruption of the peristaltic wave. This is not easily detected on the screen, and is best observed by making a series of films in such a way that the

suspicious portion is on the profile. A comparison of serial films will clear up the point.

The outline of the normal greater curvature is not always regular—it is quite often "crenated," giving the appearance of the jagged inroads of an extensive growth. Palpation reveals the absence of any tumour, and it may be possible actually to palpate out the cause of the appearance, that is, the oblique direction of the rugæ which pass over the profile irregularly instead of running parallel with it, as usually happens. A growth on the anterior or posterior walls will displace the opaque food and give comparatively transradiant areas in the midst of the opaque food. Manipulation will show up these invasions of the cavity most satisfactorily.

It is always easier to make a positive than a negative diagnosis, and in any case of doubt a further examination after an interval is the safest line to take. The responsibility of the radiologist is a very grave one, and often the clinician will unwittingly press him into expressing an opinion which his observations are not sufficiently definite to justify. There are times, only too many, when it is the obvious duty of the radiologist to hedge and play for time to make more clear the signs on which he has to rely. My own experience is that the doubtful cases nearly always turn out to be negative as regards growth.

In this brief survey many possible lesions are omitted, leather-bottle stomach, papilloma, syphilis, tubercle, &c. They are all, however, so comparatively rare that, together, they do not account for more than a very small percentage of pathological cases.

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A MEDICAL MASTER OF THE HABERDASHERS' COMPANY.

Dr. Walter Carr, consulting physician to the Royal Free Hospital, is the new Master of the Haberdashers' Company, and a number of medical men attended the Livery dinner held at the Company's Hall on Nov. 28th. Sir John Rose Bradford, President of the Royal College of Physicians, replying to the toast of the "Medical Profession," proposed by Alderman Maurice Jenks, said that it was an especial pleasure to be present because he had known Dr. Carr since they were at school together. The medical profession nowadays occupied a curious position, because although the public were always ready to believe what doctors said about preventing disease, they were by no means ready to accept advice about treatment. For this they preferred unqualified advice—which was strange, because no sensible person would get a picture painted by an artist who had not been trained, or take the opinion of a lawyer who had not been trained, or get a house built by an architect who had not been trained. Fortunately the City companies had always given generously to hospitals and research, and 50 years ago, when it was difficult to get money for such an unfashionable object as scientific investigation, the City companies had given striking examples of benevolence in this cause. Mr. V. Warren Low, vice-president of the Royal College of Surgeons, said that the attitude of his college towards the companies was that of a poor relation towards a wealthy aunt. But few aunts, he thought, had shown such generosity, especially towards research. Replying to the toast of "The Guests," proposed by Mr. G. Woods Woollaston, Norroy King of Arms, Sir Humphry Rolleston, Regius Professor of Physic at Cambridge, spoke of the work of the Haberdashers' Company for education and for the care of the aged. This was an *annus mirabilis* in the City from the medical point of view, for the Haberdashers, the Drapers, and the Pewterers—not to mention the Apothecaries—had all chosen medical Masters. The choice of Dr. Carr was an exceedingly wise one, as he could testify from 30 years of friendship. In replying to the toast of "The Haberdashers' Company," proposed by Mr. R. M. Holland-Martin, Prime Warden of the Fishmongers' Company, Dr. Carr expressed his great pleasure at fulfilling a long cherished desire to entertain his medical friends in the Company's Hall. Among those present were Dr. Robert Hutchison, Dr. H. Morley Fletcher, Mr. Samuel Osborn, Sir Farquhar Buzzard, Mr. Percy Flemming, and Sir Holburt Waring.

Special Articles.

SOME OBSERVATIONS ON SCANDINAVIAN SURGERY.

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I.

THESE articles are based upon experiences gained from six months' study in the hospitals of Scandinavia and Central Europe. It was my good fortune to be the first G. H. Hunt Travelling Scholar from the University of Oxford, and I gratefully acknowledge the kindness of the trustees of the scholarship for their approval of my wish to study general surgery, with particular reference to that of the chest, and the use of radium. I also thank the Committee of the Middlesex Hospital for leave of absence during that period. I was much impressed by the internal convenience and management of the Swedish and Danish hospitals, with their small wards and many theatres en bloc, but these have recently been so fully described[1] by Mr. H. S. Souttar that further enlargement is unnecessary.

Although these observations profess to deal with certain special branches of the art, a few general impressions may be interesting to some readers. In Great Britain general anæsthesia is the rule, local the exception. On the continent the reverse obtains—general anæsthesia has a limited application and local a far wider, and is even used for such extensive operations as thoracoplasty and gastrectomy. Gastric operative surgery is almost resolved into gastro-duodenal resections after the methods of Billroth I. and II.; gastro-enterostomy is rare. Prof. Finsterer, of Vienna, is a revelation of exactness and patience in all gastric operations, particularly in those for extensive cancer, all under local anæsthesia. Gastro-enterostomy is never performed in the presence of simple ulceration. Interrupted sutures are universally used, and small needles in a holder preferred to large. The technique of treatment for fractures of long bones varies in almost every clinic, but the underlying principle is the same—viz., extension by callipers or transfixion pins. Prof. Einar Key deals with certain fractures—e.g., spiral of tibia (a frequent result of ski-ing accidents), and both bones of the forearm with inward displacement, by immediate operation. Bone-grafts are always preferred to plates.

From these incidental observations I turn to the

USE OF RADIUM AND X RAYS AT RADIUMHEMMET, STOCKHOLM.

The Radiumhemmet is the centre for the control of radium in Sweden, and at the beginning of this year had two grammes of the element at its disposal, but with the prospect of a larger stock in the near future. There are two other clinics situated a long distance from Stockholm, and these control small supplies, but beyond them no other hospital possesses radium. Patients who are recommended for treatment come under the sole care of the Radiumhemmet, and are treated on the understanding that they will attend for re-examination at regular intervals. State-aid for travelling is given if necessary. An admirable registration and follow-up system is in use, patients being indexed under three separate headings—name, disease, and time for attendance, while dictaphones are freely used for note-taking. The Radiumhemmet only possesses about 40 beds, and as a result the majority of their extensive clinic are treated as out-patients. The Institute is under the control of Prof. Gösta Forssell, with Drs. Berven and Heyman

[1] THE LANCET, August 3rd, p. 242.

in charge of the general surgical and gynæcological departments respectively. In addition there are assistants who have had at least three to four years' training in radiology before reaching the Radiumhemmet, and there are well-equipped pathological laboratories for investigation and research. The technique and fundamentals of the treatment now in use have been arrived at after considerable experience, dating from about 1910, and have been influenced to some extent by the available quantity of radium. The whole outlook is scientific and is continually changing in an endeavour to find new forms of treatment to replace those that do not give satisfaction over a period of several years. Every patient submitted to the Radiumhemmet comes under its absolute control if suitable, no matter what organ of the body is affected, and the employment of major surgery is at the discretion of the clinic. At the present time radical surgery is frequently used in conjunction with radiology, since the figures for the combined technique are definitely superior to those in which surgery alone, or radiology alone, is employed.

When major surgery is required, the patient is operated on in another hospital in the town by a chosen surgeon, while a doctor from the Radiumhemmet is generally in attendance. It is, however, possible to perform operations at the Radiumhemmet itself, but these are usually confined to electrocoagulation by means of endothermy in conjunction with radiological treatment. The visitor is bound to be impressed by the expert clinical knowledge of malignant disease during all its stages, and there is no attempt to expatiate on the virtues of any particular method. The accuracy of results and observations for publication are definite and the limitations of radium are fully realised in spite of its obvious value in many cases. Biopsy, in the absence of active treatment at the same time, is not favoured, and as a result of their experiences the Radiumhemmet has circularised the medical profession of Sweden, requesting them to forego this examination unless they are treating the condition radically at the same time.

Almost exactly the same principles apply to the Copenhagen Radiumstation in Denmark.

Methods of Use of Radium.—Radium is applied in three ways :—

Intubation.—10 mg. tubes 0·3 mm. lead equivalent screen for buried radium.

Surface Application.—Doses vary; also screen, according to range at which applied.

At a Distance.—Lysholm cannon, with extra 3 mm. screen for deeper radiation over given fields, usually at 5 cm. distance. 20–25 gramme-hours constitutes an erythema dose.

X rays and radium are used so as to avoid marked damage to the general tissues of the body and exposures to them are designed so as to submit as small a volume of the blood stream as possible to the radiation. Reaction is gauged by frequent examination of the blood count, and overdose is shown by a leucopenia, in which the lymphocytes especially are diminished.

Treatment of Special Conditions.

Benign.—Skin and vessel tumours, such as hæmangiomata and warts, are frequently treated by radium in the form of surface applications. Toxic conditions of the thyroid are freely irradiated, starting with very small doses, so as to avoid any exacerbation of symptoms, and with the definite knowledge that surgical intervention will be necessary if the condition does not respond promptly and adequately. A special applicator is used in hypertrophic conditions of the tonsil, which cannot be submitted to operation. Chronic interstitial mastitis is regarded as potentially precarcinomatous and is treated by X rays. Continued observation is deemed essential, but simple removal of the breast is rarely performed for this condition. Leucoplakia is also actively treated on account of its precancerous tendency by superficial endothermy after the area has been cocainised. The coagulated tissue separates off later as a slough, leaving a satisfactory scar. The analgesic effect of X rays on certain common conditions is made use of in many clinics, apart from the Radiumhemmet. Osteo-arthritis of superficial joints may gain considerable relief, while chilblains, whitlows, and furunculosis may improve appreciably.

Malignant Disease.

Oral and Buccal Carcinoma.—From the existing Radiumhemmet figures it is found that there is some variation in the radio-sensitivity of different situations. For example, the lymphosarcoma of the tonsil responds very promptly to radium application, and gives a satisfactory prognosis if there is no glandular involvement. On the other hand, carcinoma of the cheek is comparatively insensitive and, as secondary infection is often present, the main result of radiation is central necrosis with extension of the growth at the periphery. This form, therefore, is more frequently treated by endothermy, sometimes supplemented by radium at a distance. Cancers of the tongue are usually submitted for a start to two cross-fields of radium at a distance with the cannon (20–25 gramme-hours). The affected area is then coagulated between two small plate-electrodes with endothermy, and the periphery intubated with short 10 mg. radium needles inserted vertically for 2 to 4 hours, the tubes roughly being 1 to 1·5 cm. apart. The glandular fields are treated according to their condition. If there are no palpable glands a course of radium at a distance, to total about 20–30 gramme-hours is employed. If on observation there are found to be glands palpable, but not definitely adherent, they are submitted to block dissection by one surgeon, Dr. Hybbinnette, and radium may be buried. The opposite side is treated on the same principle. When the glands are advanced, this is when they are fixed superficially or deeply, radiation is employed, principally with the radium cannon, the dosage being watched very carefully to prevent breaking down of the mass. Carcinoma of the lip is treated on the same lines.

Carcinoma of the Breast.—Formerly the usual treatment of carcinoma of the breast consisted of the radical operation, followed by post-operative courses of X rays, but in recent years preoperative radiation has been employed in addition. Though the actual figures are not yet to hand, there has been a considerable improvement as the result of this and the preoperative radiation is held to be of more value than the post-operative. Preoperative radiation is so timed that the radical and full surgical operation is performed when the tumour is under the maximum effect of the radiation. Microscopically, the tumour cells at this time show, over large areas, degenerative changes with poorly staining nuclei and disintegration. The presence of giant cells also indicates reaction of surrounding tissues against the tumour. Macroscopically, the size of the tumour diminishes, and some cases, which have been classified previously as inoperable, come under the heading of operable cases.

Operable Cases.—The primary tumour is irradiated so as to expose as small a quantity of blood as possible to the radiations over two fields, each receiving 4 to 6 treatments, and each treatment of 1/3 to 1/4 erythema dose (½ Cu. +1 mm. Al. filter) at a distance of 40 cm. Affected glands in the axilla are treated on similar lines. Some slight redness of the skin will result, and 3 to 4 weeks after the treatment has been concluded the radical operation is performed. The timing of the operation is a matter of considerable importance. The post-operative treatment has been carried out with relatively small doses, the general reaction of the patient being carefully watched. Massive irradiation of the thorax was tried some time ago, but was soon abandoned. Two to four weeks after operation two or three fields are irradiated with 1/4 to 1/6 E.D., with 4 to 6 treatments each (4 mm. Al. filter at 50 cm.). The series of treatments usually covers about a fortnight, and the reaction should scarcely be noticed on the skin. Three months later

a second similar series may be given, and a third after yet another three months.

Inoperable Cases.—The tumour with its lymphatic field is treated with similar doses as stated in the preoperative series, and this is carried on until the tumour does not respond by further diminution in size. Then the primary growth is excised with diathermy, making no attempt to form flaps. A large raw area is left, and this is allowed to granulate over, a process which may take some time. In addition, sterilisation by large doses directed against the ovaries is performed, and thyroid is given by mouth. Palliative results over several years have been obtained on these lines, and in a few cases even an apparent cure.

Recurrences.—In cases with recurrences and metastases extensive radiation is not highly valued, since the patient, as a whole, can too easily be damaged. As a result the recurrences are treated either by surface application or by intubation with radium. Rib and bone secondaries respond quite well to this form of treatment, and where possible radium at a distance is often employed. When secondaries occur in the spine, hip, or pelvis the analgesic effect of X rays is valuable, and, in a few cases, relief for some years has resulted.

The lines of treatment, as given above, are preferred to other measures, such as burying radium round the primary tumours and glands, but when sufficient is available the use of radium at a distance has definite possibilities.

Uterine Cancer.—For carcinoma of the cervix operation at the Radiumhemmet has been abandoned, and all cases are submitted to radium treatment. Without anæsthesia, and following routine cystoscopy, an intra-uterine applicator with 3 mm. Pb. screen of about 40 mg. is inserted into the dilated cervix. The vaginal applicators to total about 77 mg. are packed round the cervix, great care being taken to protect the vaginal wall, and so prevent rectovaginal fistulæ. These are left in about 20 hours, and the treatment is repeated in 1 to 3 weeks. Treatment on the same lines is carried out in England with considerable success. This branch is under the control of Dr. Heyman, who combines the rôles of gynæcologist and radiologist.

Skin.—Skin cancers, including rodent ulcers and epitheliomata, give good results when treated by surface application and intubation. The doses are so applied as to produce a good scar. Sarcoma of bone, muscle, and melanomata are treated extensively by radium and X rays, but the results are very disappointing. Carcinoma of the œsophagus and stomach are occasionally treated by cross-fire with X rays, but with no hope of other than temporary palliation. Carcinoma of the rectum is preferably treated by the surgeon, but if X rays are used a preliminary colostomy is deemed to be essential. The burying of radium round the growth demands so wide an exposure to obtain a successful result that practically the standard radical operation has to be performed to ensure its proper application.

In conclusion, I should like to state how much I was impressed with the clinical knowledge of tumours during the course of treatment, and with the balanced judgment of each worker in regard to the prognosis.

EAST HAM ISOLATION HOSPITAL.—The Ministry of Health last week held an inquiry into the application of the East Ham town council to borrow £42,000 for the enlargement of the council's isolation hospital, which is badly overcrowded. Dr. W. Benton, the medical officer of health, stated that to comply with the standard laid down by the Ministry there should be 88 beds only, whereas there are at present 132. It further appeared that some of the nurses sleep in an old army hut, "unbearably hot in summer and very cold in winter," and that an old corrugated iron hut, formerly a store-shed, is used as a dormitory for members of the domestic staff.

THE MEDICAL USES OF RADIUM.

THE Medical Research Council publishes this week a summary of the results of research work carried out at various institutions with the stock of radium salt entrusted by the Government to the Council[1] As the preface points out, from being a doubtful empirical palliative measure for inoperable cases, radium therapy has, during the last eight years, become a curative method of primary value and in some instances is superseding surgery. The Radiology Committee of the Council have allocated the radium at their disposal to the following centres: the Middlesex Hospital; University College Hospital; St. Bartholomew's Hospital; King's College Hospital; St. Peter's Hospital; the Marie Curie Hospital; the General Hospital, Birmingham; the Royal Infirmary, Cardiff; the Royal Infirmary, Aberdeen; and the Irish Radium Committee, Dublin. The committee sound a note of caution in their introduction, for they feel that there is danger lest the general expectation of the public should outrun the real probabilities of radium therapy. "Radium should at present be looked upon," they say, "as an agent for the treatment of localised cancer, and the more limited the region affected the more chance there is of success. Once the disease is generalised the use of radium is mainly palliative."

As in previous years, the reports are conveniently gouped under the headings of regions of the body.

Cancer of the Breast.

The Middlesex Hospital has obtained the best results by using radium at a distance of several centimetres, so that no skin damage has been caused. They suggest the application of greater quantities at still greater distances. For small superficial nodules three or four applications of 10 mg. (gamma rays only) to the square centimetre, half a centimetre away, for four to six hours, usually proved sufficient. Larger nodules were treated from a distance of 2 cm. They have not found that small doses for a long time constitute a good treatment for breast cancer. The usual deep therapy has been a suberythematous dose throughout the area of disease at two or three three-weekly intervals; wide variations in quantity, concentration, distance, and time all gave satisfactory results.

Most of the patients at St. Bartholomew's Hospital were treated by radium needles screened by 0·5 mm. of platinum; a good result was obtained in 45 out of 67 patients so treated. In Dublin[2] needles containing 5–10 mc. radon in 0·4 mm. of platinum or 0·3 mm. of gold were embedded circumferentially around the primary growth and left until 2 mc. per c.cm. of neoplastic tissue had been dissipated. X rays were applied to the glandular regions in divided doses over a week. The early results were satisfactory.

Cancer of the Uterus.

The report of 1927 suggested that better results were being obtained from the Stockholm technique than from any other; this suggestion has been confirmed by the figures for 1928. Of 579 inoperable cases only 139 are alive, but it may be concluded that the radium treatment of operable cases is likely in proper hands to give lasting relief. The difficulty with inoperable cases is that some parts of the disease cannot possibly receive anything like a lethal dose. At St. Bartholomew's Hospital the Brussels technique has been modified by substituting needles for tubes. The external growth is first treated vaginally, and when it has disappeared and all ulceration healed, the abdomen is opened, the liver, pelvic organs, and aortic and iliac glands are examined, and the uterus pulled forward; the needles are inserted, so that only the eye protrudes from the peritoneum, 1–1½ cm. apart, from one

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[1] Special Report Series No. 144: Medical Uses of Radium, Summary of Reports from Research Centres for 1928. H.M. Stationery Office. 1929. Pp. 28 and viii. 1s.

[2] Report published in Sci. Proc. Roy. Dub. Soc., 1929, xix., 277.

sacro-iliac synchondrosis to the other. Four or more are then placed in front of the broad ligaments to attack the obturator glands. The ends of the ligatures are tied together and pushed into the pouch of Douglas. After seven days the abdomen is reopened and the needles removed. The second laparotomy is regrettable but is justified by the necessity for fixing the needles in position and the risk of doing damage by pulling them out blindly.

At the Marie Curie Hospital, administered by a group of medical women, a modified Stockholm technique is used. Flat applicators are used instead of cylindrical, as they are thought to give better radiation. Two radium tubes containing 30 mg. radium element and 20 mg. respectively are placed in tandem in the uterine cavity and two or three flat applicators, each containing 25 mg., are put in the vaginal vault. These are left in for 22 hours and the treatment is repeated after a week and again after another two weeks. For cancer of the body 75 mg. are placed within the uterus, and the vaginal applicators are only used at the first two treatments. While this is the routine, every case is considered individually; older patients have smaller doses and the number and position of the vaginal applicators varies with the size of the vagina and the extent of the growth. If the growth shows no response to the three treatments, further application has been found useless and hysterectomy is advised. The only contra-indications were serious pelvic or general infection and advanced cachexia with distant metastases; only 8 out of 274 cases were refused radiotherapy. Even severe anæmia does not forbid radium, but it is well to take every means available for improving the general condition. The report of the Marie Curie Clinic has been published separately[3] and includes a full description of the technique and results, together with a review and discussion of the principal methods in use for radiotherapy of cancer of the uterus.

University College Hospital[4] reports that it is impossible to differentiate between the local sequelæ of radium treatment and the normal ravages of malignant disease. These sequelæ include persistent pyrexia, pyometra, pelvic abscess and peritonitis, fistulation, dissemination of the growth and stenosis, and shortening of the vagina. Workers at the Royal Infirmary, Cardiff, found that fistulæ occurred in 10 per cent. of cases, and do not think that the incidence and circumstances justify attributing any blame to the radiotherapy. They recommend inserting a self-retaining catheter and firm anterior and posterior vaginal packing.

Cancer of the Mouth, Pharynx, Larynx, and Œsophagus.

There is still much difference of opinion as to the best way of treating cervical glands. Block dissection, dissection and insertion of radium needles, and the radium collar all give bad results in many cases. St. Bartholomew's Hospital prefers the insertion of radium needles alone. Birmingham prefers irradiation from a collar containing 70–80 mg. of radium in 5 mg. tubes for 8–24 days, producing a well-marked erythema. Dublin tried intravenous injections of selenide of lead after radiotherapy and regards this as a sound prophylactic measure. Growths in the upper air passages show remarkably different reactions to radium; those of the skin of the nasal vestibule and of the fauces disseminate rapidly and fatally. The technique adopted at St. Bartholomew's Hospital for cancer of the larynx is to expose and fenestrate the thyroid cartilage and to lay needles, screened by 0·5 mm. of platinum, directly on its surface. As the Birmingham report observes, the region is second in difficulty only to the œsophagus; radium is indicated for growths spreading to the opposite cord or running round the larynx. Œsophageal growths are examined, measured and drawn through the œsophagoscope and a piece is taken for microscopy. Radon seeds are introduced by means of a trocar and cannula and placed as far as possible at regular intervals in directions downwards and outwards at a distance of one centimetre. The immediate results have been excellent.

Cancer of the Rectum and Bladder.

St. Bartholomew's Hospital started last year to treat carcinoma of the rectum by needling through the abdomen as a preliminary to excision or to radiation from below. Further, radon seeds have been directly implanted into the growth per rectum. Radon seeds have the advantage that they can be left in situ, but it remains to be seen whether they are as effective as needles. Birmingham irradiates round the growth per rectum and inserts needles into the peri-rectal tissue with trocar and cannula, the average dose being 5400 milligramme-hours. King's College Hospital treated 30 inoperable cases by insertion of radium into the lumen of the bowel. Varying reactions were obtained; in some cases there was radio-necrosis, while in others the effect was inappreciable although the dose was the same.

St. Peter's Hospital treats cancer of the bladder either by inserting 10 mg. platinum needles 0·5 mm. thick into the periphery of the tumour outside and inside the bladder (ulcerative growths) or buried in its base (cauliflower type), or else by burning away as much of the growth as possible by diathermy at open operation and then inserting the needles into the wall around the base of implantation.

Sarcomata and Lympho-sarcomata.

The sarcomata have usually been treated by the insertion of radium, but it is not yet possible to say whether they are best treated by large intensities for a short time or by small intensities for a long time. Reports correlating therapeutic results and histological investigations have been received from the Middlesex Hospital, University College Hospital, Birmingham, Cardiff, Aberdeen,[5] and Dublin. On the whole sarcomata appear to offer a good field for radium therapy. Lympho-sarcomata, though highly sensitive to radium, have a great tendency to become disseminated, and some authorities think the dissemination is accelerated by irradiation. The results are not satisfactory.

Although figures are given in each section of the report, it is obvious that the time for attaching importance to statistical results is not yet. The Committee sound a warning against the use of radium by any medically qualified person irrespective of special training or experience in radiotherapy. The report points out that the superficial application of radium and even its insertion into the body constitute only a very small part of radium therapy, and urges the importance of taking steps to fit more men and women for this highly specialised type of work.

[3] H. K. Lewis and Co., Ltd. 1929. Pp. 37. 2*s.* 6*d.*

[4] Full report published separately.

MEDICINE AND THE LAW.

Osteopathic Treatment Censured at Inquest.

TREATMENT given by an osteopath was censured by a coroner's jury at a recent Southend inquest. The deceased, aged 72, had (according to his son's evidence) had a rupture four years ago; he refused the advice of four medical practitioners that a truss would be satisfactory and he followed for eight months the osteopath's prescribed treatment of manipulation, diet, and exercise. As there had not been attendance by a registered medical practitioner his death could not be the subject of a medical certificate. A post-mortem examination was conducted by Sir Bernard Spilsbury in the presence of the coroner and the osteopath. Sir Bernard at the inquest described the body as emaciated, the flesh sunken, and the ribs prominent; internally there was an almost complete absence of fat; acute pleurisy and pneumonia were

[5] The Sixth Annual Report of the Harker-Smith Registrar University Press, Aberdeen.

present in the right lung; the cause of death was syncope due to acute pneumonia and accelerated by insufficient food. Sir Bernard added that there was no disease which would account for the emaciated condition; the diet represented on the diet sheets (some of which were produced in court) would be quite inadequate to maintain the strength of any individual. On behalf of the osteopath it was represented that the idea of osteopathy was to reduce the diet and allow the body to get rid of poison; a grateful letter from the deceased to the osteopath was read and it was stated that the latter had treated hundreds of patients in Westcliff without fatal results until the present case. The osteopath, giving evidence, described himself as an "osteopath and nature practitioner"; he said that the deceased had a normal appetite and continually over-ate. Though taking a serious view of the evidence, the coroner did not put the case to the jury as one of criminal negiect; the jury returned a verdict in accordance with the medical evidence.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Medical Life of Clemenceau.

FEW, even in France, know what a part medicine played in the life of the "Tiger." His father, Benjamin Clemenceau, was a physician at Nantes who made only occasional excursions into politics, but one of these led to his deportation in 1858 at the hands of the Second Empire. Georges Clemenceau, who was 17 when this happened, began his medical studies at Nantes, where he was *interne* at the local hospital, and continued them in Paris as *interne provisoire*. He mixed politics with medicine at once, and was sent to prison in 1862. Three years later he was admitted doctor with a thesis on the Generation of Anatomic Elements, which (truth compels us to say) was neither worse nor better than the average of its kind. No sooner had he obtained his diploma than he set out for England, and later went to the United States, where he earned his living by teaching French. Returning just in time for the war of 1870, he again combined politics with medical practice at Montmartre, but soon gave up the latter for journalism, never to return. In memory of his early days the Association of Medical Veterans of the Front participated officially in the homage paid at the Arc de Triomphe.

A Diploma of Major Surgery.

Since the war many doctors perfectly unqualified by their previous training have blossomed into the practise of major surgery—a phenomenon not, I suppose, strictly confined to this country. This state of things is the reason why Dr. Quénu, professor of surgery in the University of Paris and President of the Academy of Medicine, proposed to urge the Government to create a compulsory diploma for major interventions. Most of his surgical colleagues backed him, and the resolution was on the point of being put when Prof. Hayem, one of the oldest members, asked for a fortnight's postponement. The resumed debate was more animated than is customary in that somewhat august assembly. The internists and pathologists opposed a compulsory diploma, and Prof. Hayem suggested a compromise in the form of an optional diploma, such as exists already in such specialties as forensic medicine, hygiene, and radiology. It may seem queer to you that an apparently simple formality should have given rise to passionate discussion. I need only recall the fact that in my country doctors have always maintained that the diploma of the faculty, delivered with the imprimatur of the State, entitles them to any and every professional act necessary for the welfare of the patient. Prof Vaquez, who led the attack, argued that it was flatly impossible to draw the line between minor and major surgery. A non-entitled physician might incise a whitlow—no one denies him the right to do that—which next day became a diffused phlegmon. It could never be proved that at the time he operated it was not yet a task for the special surgeon. As a result the physician unwilling to take such a risk would temporise, and the patient would come too late into the care of the surgeon. Prof. Balthazard, the forensic expert, remarked that if a diploma were created for surgery every specialist in gynæcology, urology, oto-rhino-laryngology, or what not would ask for one. We should then see unsatisfied patients summoning their surgeon to court for having gone outside his special field by opening an acute mastoid or draining an urgent pelvic abscess. Prof. Sergent slily suggested that a higher certificate as *interniste* would not be wasted on the surgeon, who was in many circumstances a greater danger from his medical diagnosis than from his surgical work. The debate ended with the unanimous recommendation to create a free certificate, the surgeons accepting this in preference to getting nothing at all.

A medal designed by the lately dead artist Bourdelle has been presented to Dr. Leopold-Levi by his friends and disciples. Although holding no official position, Dr. Leopold-Levi has made for himself—what is rather rare in France—a place on the scientific side of medicine. He is regarded as the first authority on endocrinology.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Poisoning with Nitric Acid Fumes.

IN a factory near Bucharest the firemen were called to put out a fire due to the breakage of a case containing bottles of nitric acid. The acid was concentrated and contained no undue proportion of nitrous acid and no sulphur impurities. The sawdust in the packing became soaked with the acid and burst into flames in many places. When the firemen arrived they found a thick pungent smoke which caused an intense but transient sensation of irritation in the respiratory passages. They were taken to hospital, but were discharged at their own request after a few hours. All three, however, were brought back to the hospital on the same day; they vomited, complained of sharp pain, and quickly developed pleurisy and broncho-pneumonia. The general symptoms resembled those noted after the inhalation of chlorine or other irritant gases. One of the three cases proved fatal, two recovered.

Hard Work and Aortic Disease.

The medical inspector of the Port of Galatz, in his quarterly report, states that many of the labourers who work about the docks at Galatz suffer from heart disease. They are not especially liable to rheumatism; indeed, a history of acute rheumatism is unusual, though many complain of the vague pains commonly called chronic rheumatism. The pains are generally held to be nervous in character or myalgic. They are all truckers, that is, men who do heavy lifting around the docks, and their heart disease is attributed to strain. It is thought to be of traumatic origin rather than the result of spreading arterio-sclerosis.

TORBAY HOSPITAL CONTRIBUTORY SCHEME.—This scheme came into operation on March 25th last, and has already produced a total of £2353. Down to Oct. 31st, 251 members and 23 children of members had been treated as in-patients. The average stay of the in-patients was 22 days, and their average cost £9 6*s*.

A MENTAL HOSPITAL ASSESSMENT.—Before the recent revaluation the net assessment of the Cardiff Mental Hospital was £6000. It was then raised to £8925, and it is now to be further increased to £9200. Inquiries about the higher assessment of other mental hospitals show that whereas the Cardiff valuation of £8925 works out at £11 18*s*. per bed, the average of over twenty similar institutions is £5 3*s*. 9*d*. per bed. Notice of objection has been given.

Correspondence.

"Audi alteram partem."

USE OF THE TERM "GASTROPTOSIS."

To the Editor of THE LANCET.

SIR,—The leading article on the Significance of Visceroptosis in your issue of Nov. 16th prompts me to inquire whether the time has not arrived when some other term should be used instead of "gastroptosis"? The word "ptosis," when applied to any other of the abdominal viscera, such as the kidney or the colon, means the dropping down of that organ, but since the fundus of the stomach does not alter in its relation to the left dome of the diaphragm, it cannot be said that the stomach is dropped in the condition generally described as gastroptosis. In so-called gastroptosis the stomach is lengthened but not dropped. In view of the fact that a stomach that is longer than the average may be normal to some people, and that a long stomach is rarely responsible for symptoms provided there is no abnormality in its tone, peristalsis, and rate of emptying, the new word required should have a physiological rather than a pathological complexion.

I am, Sir, yours faithfully,
GEOFFREY EVANS.

Park-square East, London, N.W., Nov. 28th, 1929.

*** Diagrams illustrating the wide variations in length of normal stomach will be found on p. 1210.—ED. L.

CLINICS FOR RHEUMATIC CHILDREN.

To the Editor of THE LANCET.

SIR,—It is of the greatest importance, if we are to diminish the incidence of heart disease, that we should exercise strict supervision over every case of rheumatism in childhood. It may be contended that school clinics and school examinations by the official medical officers supply all that is necessary in this direction. Unfortunately, most school clinics are absolutely soulless affairs, while the routine examination of school-children has for its main object the after-compilation of reports with long tables of statistics, the only use of which is the manufacture by a Government department of a still more lengthy report with equally lengthy and still more elaborate statistics. Moreover, in the majority of cases, the school medical officers have little or no knowledge of children's diseases, as the chief qualification for such appointments is, curiously enough, the possession of a diploma in public health, not one in children's diseases. In addition they are, for the most part, newly qualified practitioners who have had little or no experience outside their hospital work. Is it to be wondered at, therefore, that school clinics and school medical officers are unsympathetic in their attitude towards the child, the parent, and the teacher? We need a change in all this, and the appointment to such posts of men who possess the necessary qualifications—and, if possible, of practitioners of the older school, well trained in the methods of handling patients and their relatives.

Little or no provision has been made in this country for dealing satisfactorily with the rheumatic child as a definite and distinct entity, and I most strongly and earnestly urge the establishment of clinics for rheumatic children in every large centre of population throughout the country. The objection that this would cost money, whereas in these days drastic economy is called for, raises the question of whether these clinics should be under private or State or civic control. Now we know what State control means. We have only to look at the "panel" system, with all its useless "red-tapeism," to see what State control of health matters means; and, again, we have merely to reflect how child welfare centres are usually managed under civic control to be impressed with the superiority of private and absolutely independent enterprise over State or civic control. I therefore advocate private clinics for the welfare of rheumatic children and, moreover, these should preferably be linked up with general clinics for sick children. If controlled by private enterprise, such clinics need not be at all costly. A hall can usually be obtained free, or at a small rental, while heating, lighting, and attendance need not cost much. Freed from unnecessary red-tape, the clinics could be run at very little expense. Doubtless in some cases they could be fathered by some philanthropic member of the community. The clinic should be part of a general clinic for sick children, as it would be in such a clinic that we could detect those causes predisposing to the rheumatic infection in the child. Otherwise the special clinic would be lacking in the provision of prophylactic measures, which are of the highest importance in this disease. While, therefore, the special clinic would, in the first instance at least, form part and parcel of the general clinic, it would become entirely distinct from it when questions of actual treatment and supervision came to be dealt with.

The functions of clinics for rheumatic children are three in number: prevention, treatment, and supervision.

Prevention.—Prophylaxis of disease is always a most important matter for consideration. Here, then, we have to attend to such matters as teeth, tonsils, and nose, as well as to feeding, housing, clothing, and foot-gear. It is in the general rather than in the special clinic that such matters as tonsillitis, nasal infections, unsuitable and deficient diet, insanitary surroundings, clothing and the like can most conveniently be dealt with. It is here, too, that "growing pains" can be detected quite readily, and their importance brought to the notice of the parents. All this preventive work can only be appropriately dealt with in a general clinic. Cases found to be actually affected with rheumatism, its complications or sequelæ, must be referred to the department of the clinic specially devoted to such matters.

Treatment.—This will include many of the prophylactic measures already referred to, such as diet, housing, clothing, and attention to teeth and tonsils, as well as the prescription of drugs and suitable exercises. But it is not sufficient to give directions as to treatment; it is absolutely essential to see whether they are carried out. For this purpose a staff of voluntary workers will be necessary, preferably women chosen for their sound common-sense rather than for their elementary knowledge of medical matters. A little learning is always a dangerous thing, and it becomes all the more dangerous in the treatment of disease. The voluntary worker must first of all be loyal to the directions given by the physician in charge of the clinic; she must never on any account express her own views as to treatment.

Supervision is by no means the least important function. It must be applied to work and play, to home and school life. All this requires constant care and watchfulness. It means coöperation with parent and teacher. It opens up the vast questions of school hours, home-lessons, school games, gymnastics, the finding of suitable occupations, and many other details which must be attended to with the greatest care in dealing with rheumatic children.

Thus the work of such clinics is by no means superficial, and their efficiency will depend on a variety of factors. Some of these we may enumerate as follows: (1) An experienced physician must be in charge, and he must be assisted by a good staff of voluntary workers. (2) There must be close coöperation between the clinic and parents and school-teachers. (3) The clinic must not be hampered by any red-tape system in which statistical records take precedence of the real work.

The term "rheumatic clinic" is, at the best, ambiguous, and I suggest, therefore, the fuller and better title: "clinic for rheumatic children." Perhaps my remarks are somewhat premature, but I venture to predict that such clinics are bound to find a place sooner or later in the domain of public health service. They are sure to be productive of much good, not only to the individual, but to the community at large.

I am, Sir, yours faithfully,
JAMES BURNET, F.R.C.P. Edin.

Edinburgh, Nov. 30th, 1929.

IRRADIATED MILK *v.* COD-LIVER OIL FOR RICKETS.

To the Editor of THE LANCET.

SIR,—The interesting communication by Miss K. H. Coward, D.Sc., on the Value of Irradiated Milk compared with Cod-liver Oil as a Source of Vitamin D (THE LANCET, Nov. 23rd, p. 1090), prompts me to comment. While Dr. Coward refrains from drawing any conclusion of direct clinical application from her results, it is clear that two conclusions might reasonably be drawn from her statement by clinicians or others. One conclusion—favourable to irradiated milk—is the possible advantage of adequately irradiated milk over cod-liver oil in the case of very young infants, where, in not a few instances, difficulty is experienced in the administration of even 10 drops of a "good average oil" regarded by her as equivalent in clinical value to a pint of "the weakest sample of irradiated milk." The other conclusion—less favourable to irradiated milk—is that in so far as "weight for weight a good sample of oil contains from 50 to 1000 times as much antirachitic vitamin as current samples of irradiated milk," the practical value of irradiated milk for older children or adults is slight. Dr. Coward herself may not accept this conclusion; in any event it is advisable to point out reasons for its rejection.

For the past nine months I have been investigating the clinical effects of irradiated milk in the treatment of rickets, in order to confirm or refute the remarkable results claimed from its use by German investigators. The results of a first series of investigations (published in your issue of Oct. 5th) confirmed the claims of the German authorities for the therapeutic value of irradiated milk in the treatment of rickets. I had an open mind as to whether any benefit that might accrue from the irradiation could be correctly ascribed to vitamin D, and the facts recorded by Dr. Coward justify my hesitancy. If the foundation of the test is not entirely accurate—in other words, if the present conception of vitamin D is not the whole truth—great caution is necessary in appraising its results. Dr. Coward found that the sample of irradiated milk I sent to her laboratory showed the presence of "antirachitic vitamins" to the extent of 0·1 unit per gramme—the lowest content recorded, but this very feeble vitamin D milk yielded the remarkable clinical results recorded in our paper and is still continuing to do so. In view of the great potency of this milk in rickets, it is a matter of interesting speculation as to what would have resulted from the use of the richest vitamin D milk 20 times stronger.

In our paper these anomalous findings were kept in view and were referred to in the statement "with fuller knowledge time may show that these tests may require modification"—the tests referred to being the line test employed by the Pharmaceutical Society, and the ostelin units per gramme test as described by Jephcott and Bacharach. Dr. Coward's clinical record confirms the view put forward tentatively in our paper.

I am, Sir, yours faithfully,

CHALMERS WATSON, M.D.

Edinburgh, Nov. 29th, 1929.

To the Editor of THE LANCET.

SIR,—I have been somewhat astonished that Dr. Coward's sweeping generalisation on the absence of vitamin D from cow's milk should be accepted without demur. On the findings of an unknown number of tests by a method which is not described, on a series of milk samples of undescribed source, Dr. Coward comes to a conclusion of far-reaching importance. These results are quite opposed to the summary of recent work on vitamin D and milk which lately appeared in the editorial columns of the *Journal of the American Medical Association* (vol.xciii., p. 1386). There Sherman and Striebling's researches are quoted demonstrating that, in a diet otherwise free from vitamin D, from 5–10 per cent. of the calories coming from a whole-milk powder carried sufficient vitamin D for normal growth and calcification. I should be grateful if Dr. Coward can be persuaded to amplify the data of those investigations on which her important conclusion is based.

I am, Sir, yours faithfully,

Bristol, Dec. 2nd, 1929. FRANK BODMAN.

THE CRAFT OF SURGERY.

To the Editor of THE LANCET.

SIR,—Prof. Tonks has called attention to a serious deficiency in the training of our surgeons. In the days of Jonathan Hutchinson and Frederick Treves, when I qualified, we did not lack material or the teaching of diagnosis; text-book "cram" then, as now, was a necessity, marks had to be obtained on the written part of the examinations, and the best memory got the most marks, the craft of surgery in its endless detail was not taught then any more than it is now. Since 1887 I have been, until two years ago, on the surgical staff of county hospitals. I have seen the work of a multitude of house surgeons, and I look back with something like terror at my own early want of knowledge of surgical craft, and the like ignorance of my residents.

Fellows, masters, or bachelors of surgery in their early days are no better craftsmen than the pass man. If we are carpenter, musician, or art student we show manipulative dexterity, not because of our medical training, but in spite of it. How many surgeons within six months of qualifying could give the many directions to cut a special splint in wood or metal? How many men, as Mr. Rocyn Jones inquires, can use a chisel or saw? The use of a needle or thread in the hands of the average young man is a travesty in stitching; the application of pressure forceps guarantees in many cases the necrosis of an area round a blood-vessel.

Young men and women are full of technical knowledge and theory, but a practical knowledge of surgical craft is almost negligible. Prof. Tonks, a demonstrator of anatomy and a well-known artist, tells us that as a F.R.C.S. he was not taught the craft of surgery; he may never have done an operation, although holding the highest qualification. I was in the ranks of surgery, and I had to learn my craft after examiners had finished with me. In all humility I submit that Fellows are in the like position. Most of us owe our position on the staff of county hospitals to the goodwill of a lay committee, not because we are craftsmen. We may learn it by practice but we have no technical training.—I am, Sir, yours faithfully,

Tunbridge Wells, Nov. 28th, 1929. W. B. COSENS.

AVERTIN ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—I should much have liked to have been present at the discussion on avertin anæsthesia which was recently held at the Royal Society of Medicine (THE LANCET, Nov. 9th, p. 978), and to have given my experience of the drug which now runs into hundreds of cases. I have used it in every type of surgical case from operations on the skull and its contents down to amputations, and I shall continue to use it owing to properties which are a genuine delight to both patient and surgeon.

The contra-indications of avertin anæsthesia are few and limited to kidney disease and low blood pressures. The only drawback is that certain patients are noisy, perhaps a little restless, when the effect of the drug is wearing off. Only in exceptional cases can avertin by itself be said to give complete anæsthesia. Its great use is in combination with other drugs, which in themselves are insufficient. Thus an absolutely non-toxic pleasant and totally efficient combination can be obtained, which is the ideal.

In children, avertin is used in combination either with infiltration anæsthesia (½ per cent. novocain in 1/200,000 solution of adrenalin hydrochloride) or with a very minute dose of ether, on an open mask. No preliminary morphia should be given to children under 14 years. In older people, morphia gr. 1/6 is given hypodermically half an hour beforehand. Avertin in adults can be combined with spinal anæsthesia, and this has been the ideal combination for the more difficult abdominal operations such as partial gastrectomy, cholecystectomy, resection of growth of the colon, and so forth. Here the avertin must be given three to five minutes before giving the spinal injection, otherwise the latter relaxes the sphincter ani, and part of the former drug is voided, spoiling the effect of the combination. For other operations in adults its use with infiltration anæsthesia as for children forms an ideal combination for operations on the breast, thyroid, hernia, and so forth.

Avertin (except in cases of kidney trouble or low blood pressure) has the following great advantages :—

(1) It is, in my experience, non-toxic and absolutely harmless.

(2) It is quick in its action ; the patients are asleep in from three to five minutes after administration.

(3) In the greater majority of the cases it provides refreshing sleep for several hours after operation.

(4) It has a beneficial psychological action, for it has banished the dread of the anæsthetic mask and the surroundings of the operating theatre. This is a great factor in children.

(5) It can be administered by a nurse, although an anæsthetist should be present.

In conclusion, I emphasise three precautions. The tendency of the jaw to slip backward and produce a degree of cyanosis should be avoided by keeping the head low and on its side. The drug should always be tested with congo red before use. A dose of 0·1 g. per kilo of body-weight should be given.

I am, Sir, yours faithfully,

Bradford, Nov. 29th, 1929. BASIL HUGHES.

THE PURCHASE OF DANGEROUS DRUGS.

To the Editor of THE LANCET.

SIR,—In my innocence I thought that since the Dangerous Drugs Acts came into force the opium-taker could not purchase his dope unless he did so in a surreptitious way. Yesterday a case came under my care which showed me that an opium-fiend can buy just as much as he wants from any chemist who will sell it, provided that it is diluted sufficiently to come outside the Act, and also that the chemist has no need to enter such sale in his poison book. The woman was taken acutely ill with a septic condition, and it was found she had many 6 and 8 oz. bottles labelled "Laudanum, dil. 1 in 8." Her husband, a labourer on less than £3 a week, says she spent 15*s.* to 20*s.* a week on the stuff. But the most terrible part of the business came out later at night. A six-year-old grandchild she was bringing up began screaming for "her drops from grannie,"—did so all night. I inquired of the police if any action could be taken. They thought not. In fact they had in their possession a confession by the woman of her having given opium to an elder child now in a reformatory.

Cannot this evasion, which nullifies all the intentions of the Act, be brought to the notice of the proper authorities?—I am, Sir, yours faithfully,

Scunthorpe, Lincs., Nov., 29th, 1929. W. S. HALL.

CONTRACTILITY OF CAPILLARIES.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 9th (p. 1010) Dr. J. F. Fulton makes a valuable addition to our knowledge by revealing James Black's Description of Contractility of Capillaries (1825). Dr. Fulton mentions that neither Krogh, in the second edition of his monograph, nor Lewis, cites the interesting study by James Black. So far as Krogh's book on capillaries is concerned (2nd edition, p. 2), he distinctly states his work is not a monograph, and that he does not aim at a complete presentation of the literature of the subject. As a worker in the same field, I should certainly agree that the literature of the subject is not completely or even adequately presented by Krogh.

For example, the first published description of direct microscopic observation of the circulation going on in the glomerular arteries and capillaries, and the first published description of direct microscopic observation of the circulation going on in the capillaries, &c., of the liver, are both omitted from the text, and from the bibliography of Krogh's book. This is unfortunate, but as long as p. 2 of Krogh's volume is retained, there is no one responsible. On the other hand, if Krogh's volume is looked upon as an exhaustive monograph, then my colleague Leonard Hill, who is the author of the first of these discoveries, and myself, who am the author of the second, had better resign ourselves to the fate of James Black, although one never knows what might turn up in kindly obituary notices.

I am, Sir, yours faithfully,

JAMES M. MCQUEEN.

Halesowen, Worcester, Nov. 27th, 1929.

DIAGNOSIS OF GASTRIC DISEASE.

To the Editor of THE LANCET.

SIR,—Dr. Rowden's letter misrepresents my statement and my views. He bases his remarks on a very condensed version of what I said at the conclusion of a discussion ; if he will refer to the fuller, but necessarily abridged, account of my opening remarks at the same discussion (THE LANCET, Nov. 16th, p. 1041) he will see that he might well have saved himself the trouble of writing. During the course of the discussion one speaker described a case of anæmia, anorexia, and fever, which was finally diagnosed at a clinic as one of gastric carcinoma. In my reply I merely pointed out that anæmia, anorexia, and fever were three well-recognised clinical symptoms of gastric carcinoma ; it must be obvious to anyone that they are symptoms of the disease in an advanced stage. I agree with Dr. Rowden about the importance of careful study of dyspepsias at or after middle life, but it should also be appreciated that a considerable proportion of all cases of gastric carcinoma are already advanced before symptoms appear or the patients think it necessary to seek medical advice. Finally, there are plenty of functional dyspepsias after the age of 35 which may be recognised and classified clinically, and in which it is quite unnecessary to subject the patient to the trouble and expense of an X ray examination.

I am, Sir, yours faithfully,

London, Nov. 31st, 1929. J. A. RYLE.

G.M.C. ELECTION.

To the Editor of THE LANCET.

SIR,—As an independent candidate, I desire to thank all those practitioners who kindly voted for me in the recent election of Direct Representatives on the General Medical Council. Though not elected, I consider the result (2019) to have been very encouraging.

I am, Sir, yours faithfully,

Dec. 2nd, 1929. ARTHUR HAYDON, M.D., F.R.G.S.

ROYAL MEDICAL BENEVOLENT FUND.

To the Editor of THE LANCET.

SIR,—The sum of £43 has been received up to the end of November for Christmas gifts in response to Sir Thomas Barlow's appeal published on Nov. 22nd. The subscriptions have been received from the following : Anonymous (Edinburgh), Dr. H. E.

Bloxsome, Dr. G. M. Bluett, Mr. W. C. Bull, Dr. W. J. Dixon, Mr. H. A. T. Fairbank, Dr. J. Fawcett, Dr. J. C. M. Given, Sir Charles Gordon-Watson, Dr. N. G. Horner, Dr. J. Hudson, Dr. R. G. MacGowan, Dr. J. C. Maddison, Dr. D. D. Malpas, Mr. W. M. Mollison, Mr. W. S. Thacker Neville, Mr. H. T. Nixon, Dr. J. Orr, Sir R. W. Philip, Dr. C. F. J. Smith, Surg.-Lieut. L. D. Spero, Dr. W. B. Tomson, and Dr. J. Walker.

The amount of money required for Christmas gifts is £500, so that further donations are very urgently required, and should be sent to: The Honorary Treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, W. 1.

I am, Sir, yours faithfully,

E. C. PENNEFATHER,
Secretary.

Dec. 3rd, 1929.

ELECTRICAL TREATMENTS IN ACUTE CONDITIONS.

To the Editor of THE LANCET.

SIR,—I did not see Dr. Bauwen's letter in your issue of Nov. 16th, with its stimulating criticism, until some days after publication, or I would have written sooner to say how entirely I am in agreement with him on the need for "electro-therapeutists expressing their thoughts in recognised technical terms." I have read through the paragraphs in my original article to which he takes exception, and in so far as I have transgressed in not "expressing my thoughts in recognised technical terms," I must cry *peccavi*. As an offender in the matter of rules that I consider should be observed, the only extenuating circumstances that I can plead are that the lecture was addressed to students, and looseness in technical expression tends to creep in when one so well knows that many electrical terms convey little or nothing to them.—I am, Sir, yours faithfully,

C. B. HEALD.

Park-crescent, Portland-place, W., Dec. 3rd, 1929.

A WHITE BLACK-BOARD FOR THE OPERATING THEATRE.

To the Editor of THE LANCET.

SIR,—Every surgeon in a teaching hospital, either just before an operation or even during its performance, must on occasion have wished to draw a diagram—a wish denied his gloved hand by the rule of asepsis. In my own theatre I have met this recurring need for surgical illustration in a simple way, and I can now go at any time to a board hung as a fixture on the wall and draw or write upon it without breaking the aseptic routine of operation. Chalk dust is undesirable, and I use the soft crayons, made on a grease basis, which are sold for children in every stationer's shop. These crayons require a white surface, which was got by painting an ordinary black-board with white enamel paint. The board is convenient to the operating table and in easy view of the students' gallery. The crayons stand, point downwards, in a metal rack like that employed for tubes in the Wassermann test. The required crayon is grasped with long, sterile sponge forceps, which are fenestrated. Six will hold the traditional colours of anatomical diagram. The crayons are best used short—a stub does not break off. Crayon marks can at once be effaced by an attendant with a swab moistened with ether. This, in time, removes a thin film of paint, but so thin that after two years my board remains clean, white, and attractive.

I am, Sir, yours faithfully,

ARNOLD K. HENRY.

Faculty of Medicine, Cairo, Nov. 13th, 1929

ABERGAVENNY COTTAGE HOSPITAL.—Lady Mary Herbert last week laid the foundation-stone of a new wing which will include a maternity ward. This will be the third enlargement since the hospital was built in 1901; as a dispensary it has existed since 1828.

Obituary.

SIR ARTHUR SLOGGETT, K.C.M.G., K.C.V.O., F.R.C.S. ENG.,

LATE DIRECTOR-GENERAL OF MEDICAL SERVICES.

THE death of Lieut.-General Sir Arthur Sloggett, Director-General of Medical Services in France during the late war, and Chief Commissioner of the Red Cross (briefly announced in our last issue), occurred suddenly on Nov. 27th, just after he had reached his seventy-second birthday.

Arthur Sloggett, the son of the late Inspector-General W. H. Sloggett, of Paignton, by his wife Elizabeth, daughter of Thomas Crossing, J.P., of Stoke Damerel, was born at Stoke Damerel, Devon, and received his education at King's College, later joining the medical school of King's College Hospital. He obtained the qualifications of M.R.C.S.Eng., L.R.C.P. Edin. in 1886, immediately after which he entered the medical branch of the army. From that time forward he was constantly on active service, and as long ago as 1896 became a marked man when, being senior medical officer on the expedition to Dongola, he was mentioned in despatches, promoted to Surgeon Lieut.-Colonel, and received two Egyptian decorations. Two years later he was the senior medical officer of the first brigade of the British division in the Nile Expedition, and at the Battle of Khartoum was shot through the chest, an injury from which he made a remarkable recovery—he is said to have accounted for the fortunate issue by explaining that "his heart was in his boots." Further mentions in despatches, promotions, and decorations followed. In the South African War he was placed in charge of the Imperial Yeomanry Hospital, being later P.M.O. at one of the general hospitals. He played a prominent part in all the operations of that prolonged struggle, was again mentioned in despatches, decorated, and received the C.M.G. In 1903 he was the P.M.O. to the Home and London districts, an appointment which he held for five years, when he became P.M.O. to the Bombay Presidency. In 1911 he was promoted to be Director of Medical Services in India, and received the C.B.

SIR ARTHUR SLOGGETT.
[Photograph by Elliott and Fry.

Sloggett had been called home to succeed as Director-General Army Medical Services three months before the war broke out, and in September, 1914, he was appointed Director-General of the British Armies in the Field, as well as Chief Commissioner of the British Red Cross and the Order of St. John. As all know, he discharged his onerous duties with vigour and conscientiousness. In the late Sir William Macpherson's "General History of the Medical Services in the War," which is based on official documents, it is stated that the scheme, whose duality was criticised, worked admirably throughout the war, its success being essentially due to the fact that the regular organisation of the Army Medical Services was no longer subject to the conflicting interests and rivalries of voluntary aid organisations. What really emerged was the fitness of a man of Sloggett's attributes—of his tact, good temper, and energy—

for a difficult post, carrying responsibilities that might easily have become mutually antagonistic.

In June, 1918, Sloggett's term of office ended, and there was considerable difference of opinion as to whether it should be extended in recognition of the way in which he had met his duties. Representations to this effect were made in several quarters but were unavailing, and Sir Arthur Sloggett was succeeded in the ordinary course by Lieut.-General Sir John Goodwin, the present Governor of Queensland. Sloggett made for himself a great name by the way in which he discharged for more than three and a half years his far-reaching commitments, his success being made possible alike by his 30 years of official experience and his innate qualities of sympathy and geniality.

Sir Arthur Sloggett's honours were many. He received the C.M.G. nearly forty years ago, was made C.B. in 1910, was knighted in 1914, and in 1917 was promoted K.C.M.G., and created K.C.V.O. He was also a Grand Officer of the Legion of Honour, a Commander of the Order of Leopold (First Class), and held the Croix de Guerre both of France and Belgium. He was surgeon to His Majesty the King. He married in 1881 Helen, daughter of Mr. J. R. Boyson, formerly Solicitor-General of Madras, and had one son, Lieut.-Colonel A. J. H. Sloggett, D.S.O., late of the Rifle Brigade, and two daughters, who married respectively Lieut.-Colonel Llewelyn Evans, C.M.G., D.S.O., and Major J. T. Duffin, M.C. Sir Arthur Sloggett died suddenly while walking in Regent's Park, London, with his son.

SIR JOHN ALEXANDER COCKBURN, K.C.M.G., M.D. LOND. & ADEL, M.R.C.S. ENG.

Sir John Cockburn, who died on Nov. 26th in King's College Hospital, was a prominent figure in the politics of South Australia for forty years.

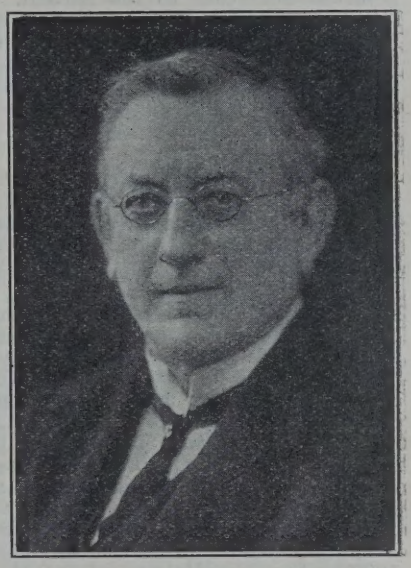
John Alexander Cockburn was a Scot who came to Cholmeley School, Highgate, and King's College, London, for his education, taking the medical course at King's College Hospital. He qualified in 1871 as M.R.C.S., graduated M.B. in the University of London two years later, and in the following year proceeded to the M.D., being awarded the Gold Medal. In 1876 he migrated to South Australia and two years later became mayor of the town in which he elected to settle, thus inaugurating a public career whose utility only ceased with his death. At the age of 38 he became Premier of South Australia and until his retirement from active politics in 1898 he was found discharging many duties in many political combinations. At no time did his medical education and training seem to play much part in his political activities, though he held the portfolio of Education on more than one occasion, and made useful contributions to debates on public health and economics; he will be remembered in Commonwealth administration by his work in respect of the taxation of land and the extension of suffrage.

In 1898 he became Agent-General, and from that time forward was a familiar figure alike in social and business circles. He represented the Commonwealth at numerous important, international congresses, dealing with public health, infant welfare, national insurance, and other economic problems; he became president of the Men's International Alliance for Woman Suffrage, of the Entente Cordiale Society, the International Philological Society, and the Society for Masonic Study; he was for 17 years chairman of the Swanley Horticultural College, on the council and vice-president of the London School of Economics, was President of the Child Study Society, and he did prominent work for the London County Council in respect of elementary education. He was created K.C.M.G. in 1900.

This brief record of a busy life shows that the medical profession had reason to be proud of their colleague as a citizen valuable to his generation.

ARTHUR TEMPLER DAVIES, M.D. CAMB., F.R.C.P. LOND.

THE death of Dr. Arthur Davies at the age of 71 leaves us poorer of a sound practical physician with a charming personality. Arthur Templer Davies was the son of Dr. Herbert Davies, and grandson of Dr. Thomas Davies, both of whom lived in the City of London, and were on the staff of the London and City Road Hospitals; his father was also physician to the Bank of England, and the son followed very closely the family tradition. Born in Finsbury Square, he was educated at Charterhouse and Trinity College, Cambridge, where he took his tripos in 1880. He went on to St. Bartholomew's Hospital, qualifying in 1884, and holding office as house and casualty physician. Having taken the necessary medical qualifications, he joined the staff of the Metropolitan and City Road hospitals with which he remained associated for the greater part of his life. One of his main interests was tuberculosis, for which he found additional scope at the Royal Ventnor Hospital, but he never specialised in any narrow sense, and a breadth of knowledge fitted him for his work as physician to the Bank of England and to a number of life assurance offices. His publications also covered a wide field. He brought out an edition of his father's "Mechanism of the Circulation of the Blood," wrote on myxœdema and other dyscrasias, and delivered an oration to the Hunterian Society on Organotherapeutics, Ancient and Modern, which revealed wide study and clinical insight.



DR. A. T. DAVIES.

Dr. Davies was an original member of the Assurance Medical Society or, as it was at first called, the Life Assurance Medical Officers' Association. He took a keen interest in its work, and was successively a member of the council, secretary for four years, vice-president and president in 1916-17. His presidential address considered the heart and nervous system, in relation to the stresses of war, and, like all his contributions, was practical and to the point. "He was always," writes one of his colleagues, "modest in presenting his views, but they were invariably the result of careful thought and showed his wide practical knowledge and experience. His reports contained all essentials, and his decisions were clean-cut." During the war he acted as hon. physician to the Fishmonger's Hall Hospital for Officers.

Dr. A. G. Phear writes: "As one who was actively associated with Dr. Davies in the work of three hospitals, I should like to add a small tribute to his memory. Dr. Davies resided in the country, and after his retirement from active hospital work he was seldom seen by his friends in the metropolis, except at occasional committee meetings; he had, however, a great capacity for friendship, and an intense loyalty to his friends was a leading feature of his character. His friendships were of an enduring nature, and to

meet him again, even after a long period of absence, was to return at once to the old atmosphere of intimacy. His devotion to the hospitals he served so well was remarkable; he gave of his best to each of them; but his sympathies were, perhaps, specially identified by reason of family associations, with the Royal Chest Hospital in the City Road. In committee work his sound judgment and sane outlook were invaluable assets, and, as he was always ready to see the other side of the question, his considered opinion carried great weight with his colleagues. He was a great lover of plants; much of his leisure was spent in personal attention to his garden. Throughout the latter part of his life his outlook remained fresh, and he retained to the end a certain youthfulness of mind."

Dr. Davies married in 1889 Alicia, daughter of the Rev. Robert Irwin of Trinity College, Dublin, by whom he had a son and a daughter.

ARTHUR MERCER DAVIES, M.R.C.S., L.S.A., D P.H. CAMB.,

LIEUT.-COLONEL, R.A.M.C. (RETIRED).

WE regret to record the death of Lieut.-Colonel Arthur Mercer Davies which occurred on Oct. 25th at his house at Eltham in the 77th year of his age. Davies, who was the son of a clergyman, was born at Westminster and educated at Westminster School and Queen's College, Cork, whence he entered the medical school of Westminster Hospital. He was both a hard worker and a fine athlete. He took the double qualifications of M.R.C.S., L.S.A. in 1880 and immediately entered the Army. The country was involved in the Egyptian War shortly after Davies joined the R.A.M.C., and he saw much fighting in the Eastern Sudan and in the Nile Campaign. Then came a period of service in India where his interest in public health problems became prominent. In 1889 he took the diploma of D.P.H. Camb., obtained his majority in 1893, became Lieut.-Colonel in 1901, and retired seven years afterwards. From 1904 to 1908 he was professor of military hygiene at the Army Medical School, Netley, and was well qualified for this appointment since, during his period of service in India, he had done special official work both as bacteriologist and general sanitary officer. The appointment at Netley was confirmed at Millbank, and when he finally retired from the Army he obtained a post under the London County Council as an officer in the Public Health Department.

Colonel Davies was an accurate and fluent writer, the author of a popular handbook on hygiene, a treatise on the Food of the Soldier, and many official reports and contributions to the medical press on subjects connected with public health, military hygiene, and bacteriology. He was also for many years a valued member of the staff of THE LANCET. He leaves a widow, who is the daughter of Captain David Aird, R.N.

GEOFFREY LUCAS, B.A. CAMB., M.D. DURH., L.S.A.

Dr. Lucas, who died at Las Palmas on Nov. 26th after prolonged illness, was the youngest son of Arthur Lucas (of Hitchin) and was born at Darlington in 1875. He was educated at Durham and Tonbridge, entering Caius College, Cambridge, with an exhibition, taking the Natural Science Tripos in 1899 and demonstrating physiology in the University. Four years later he qualified from St. George's Hospital with the L.S.A. diploma and held house appointments at Westminster Hospital. He then spent two years at sea with the Orient Steam Navigation Company 1904-06 before settling down to practice at Ringwood, where he became medical officer of health to the Ringwood district. It was there that he became interested in the treatment of tuberculosis, which led him to take a resident post at the Banchory Sanatorium where he remained until 1921, with the exception of the period of the great war when he was at first physician to the 1st Scottish General Hospital and later held a commission at No. XI. Stationary Hospital B.E.F. On leaving Banchory he joined Dr. Vere Pearson at Mundesley Sanatorium until he retired last year after having made several more long voyages in search of health.

Dr. Pearson writes: "Dr. Lucas was a successful sanatorium doctor because he was genuinely fond of his work and because he was a sound general physician. A succession of patients were devoted to him because he was a man of parts, with wide interests, fond of fishing and shooting, and a good bridge player, but above all because they felt he always took an essentially sympathetic and wise interest in their welfare, He lived with his patients ordering the details of their living, understanding their foibles, and comprehending their difficulties. He was a quick worker, had an able brain, and was well versed in other branches of medicine besides tuberculosis. When during the war he practised as a general physician in the wards of the 1st Scottish General Hospital, Aberdeen, he did a certain amount of teaching as an assistant to Prof. Ashley Mackintosh. He would quickly grasp the gist of modern advances in medicine, and generally kept well abreast of these whether they were directly, or only indirectly, connected with the subject of pulmonary tuberculosis, which was, of course, the disease from which most of his patients suffered dnring the greater part of 20 years of his working life. By many of these he will be missed."

Dr. Lucas leaves a widow who with her two children has recently taken up residence in Australia.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 23RD, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 279 (last week 172); scarlet fever, 3673; diphtheria, 1692; enteric fever, 49; pneumonia, 1263; puerperal fever, 51; puerperal pyrexia, 116; cerebro-spinal fever, 10; acute poliomyelitis, 9; acute polio-encephalitis, 2; encephalitis lethargica, 19; dysentery, 10; ophthalmia neonatorum, 116. No case of cholera, plague, or typhus fever was notified during the week.

Of the small-pox cases 84 were reported from the County of London, as against 54 last week. These were distributed as follows: City of London, 1; Bermondsey, 2; Bethnal Green, 13; Camberwell, 16; Hackney, 5; Islington, Kensington, Lambeth, Lewisham, each 1; Poplar, 3; St. Pancras, 5; Shoreditch, 6; Southwark, 19; Stepney, 10.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Nov. 26th–27th was as follows: Small-pox, 319 under treatment, 8 under observation (last week 240 and 17 respectively); scarlet fever, 2828; diphtheria, 2663; enteric fever, 89; measles, 367; whooping-cough, 109; puerperal fever, 32 (plus 14 babies); encephalitis lethargica, 125; poliomyelitis, 7; "other diseases," 16. At St. Margaret's Hospital there were 8 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 5 (4) from enteric fever, 23 (4) from measles, 9 (2) from scarlet fever, 22 (1) from whooping-cough, 43 (8) from diphtheria, 76 (17) from diarrhœa and enteritis under two years, and 75 (10) from influenza. The figures in parentheses are those for London itself.

The single death from enteric fever outside London was reported from Acton. Diarrhœa accounted for 8 deaths at Liverpool and 6 each at Manchester and Salford. In Liverpool there were 5 deaths from diarrhœa and 4 from scarlet fever. Manchester and Wigan each reported 4 deaths from measles and West Ham 3.

There was no death from small-pox in the returns received from areas outside greater London, the county boroughs, and great towns for the month of October last.

The number of stillbirths notified during the week was 265 (corresponding to a rate of 42 per 1000 births), including 63 in London.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

HILDREN AND YOUNG PERSONS (EMPLOYMENT AND PROTECTION) BILL.

In the House of Commons on Nov. 29th Mr. SORENSEN ıoved the second reading of this Bill. He said that there ere hundreds of thousands of young persons working hours hich he could only describe as perfectly abominable. This ad an adverse effect on the health of the community, and f the young people in particular. There were still a umber of young people and children who were adversely ffected in industries which employed lead paint, and one f the clauses of this Bill prohibited entirely the employ- ıent of young persons in those concerns, except under very rastic conditions regarding apprentices. There was nother clause in the Bill which dealt with the effect on oung life of the lifting of weights that were altogether isproportionate to the size and strength of the young lads. 'he measure also protected young people employed in con- exion with theatrical entertainment. The chief point of ıe Bill was that there should be no children under the ge of 13 employed, except those who were lawfully employed 'hen the measure came into operation. Between the ages f 13 and 16 the Bill provided that the total number of ours worked should be 38, or 8 hours per day. No child ıould work before the close of school each day. Between ıe ages of 16 and 18 the total number of hours worked ıould be 48, or 9 hours per day. Under the age of 18 here should be no Sunday work, and one half day per week ıould be guaranteed to the children and young people f the country. It was also provided that under the age f 16 no young person and no children should be employed ı the coal-mines, and between 16 and 18 only those should e employed who had obtained a certificate of medical tness.

Dr. MARION PHILLIPS seconded the motion for the second eading.

After some debate,

Mr. CLYNES (Home Secretary), said that the attitude of he Government towards the Bill was one of the com- letest goodwill and sympathy, but most of the ground overed by it had already been covered by Bills introduced y the Government, or Bills which they intended to intro- uce. He suggested that the purpose of the promoters ight have been served by the debate that day, and that ıey should trust to the Government measures to which e now referred, and that this Bill might be withdrawn.

Dr. VERNON DAVIES said that the sympathy of all parties ı the House was definitely with children and young persons, ut those who had had experience of child workers or young orkers in textile factories recognised that Mr. Sorensen ı bringing in this Bill had taken on a colossal task and one hich was really beyond the competence of any private lember. That task could only be adequately discharged y means of the large experience and sympathetic help of ıe Government. He welcomed the advice of the Home ecretary that the promoters should be satisfied with having aised the subject.

In reply to Mr. SORENSEN, Mr. CLYNES said that he could ive an assurance that when the Government had disposed f their Factories Bill, which covered only those employed ı factories, they were quite eager and ready to try to over the remaining groups by a separate Bill which would e introduced as early as possible.

Mr. SORENSEN asked leave to withdraw the Bill, but eave was refused.

Lieut.-Colonel FREMANTLE said that it might be neces- ary to withdraw the Bill at a later stage, but personally e hoped that Mr. Sorensen would go through with it. The ıedical side of the Bill was extremely important, and he oped that it would not be forgotten even if the Bill was ithdrawn. There was a clause in the Bill which dealt ith trades which had been neglected in the health services o far—the mercantile marine and mines.

After further debate,

Mr. STRAUSS moved that the debate on the Bill be djourned.

On a division the motion for adjournment of the debate as carried by 152 votes to 45.

EXPENDITURE ON PAUPER LUNATICS.

Mr. GREENWOOD, Minister of Health, informed Major ILYN that the expenditure of Poor-law authorities in England nd Wales during the year ended March 31st, 1928, in onnexion with the certification and cost of conveyance of ınatics, was £62,607.

HOUSE OF LORDS.

THURSDAY, NOV. 28TH.

MENTAL TREATMENT BILL.

Earl RUSSELL, Parliamentary Secretary to the Ministry of Transport, in moving the second reading of the Mental Treatment Bill, said that he was not the normal representative of the Minister of Health in that House, but he had been selected for the duty on account of the experience which he acquired a good many years ago on the London County Council, when for several years he used to visit at least two asylums every week and acted for some years as Chairman of Hanwell Asylum. His interest in, and knowledge of, the subject was revived and increased when the Royal Commission was appointed in 1924 and of that Commission he was a member. It sat for two years and reported in 1926. He had been responsible when on the other side of the House for asking why that Report had not been acted upon and why nothing had been done. It therefore gave him special pleasure to present to their lordships a Bill which dealt at any rate with the important parts of the recommendations of that Commission. The Bill did not profess to create an entirely new code. That was recommended by the Royal Commission and would be very desirable, but the system under which legislation was conducted made any Government reluctant to undertake too large and too comprehensive a Bill on account of the difficulties of Parliamentary time. Therefore this Bill which was now before the House was a comparatively small Bill, although the amendments which it made were, from the point of view of the treatment of patients, very important. The Government would welcome any improvements that their lordships could suggest in the passage of the Bill through the House. It had been considered for several years by successive Ministers of Health with great care and they believed that they had arrived at the best solution, but it might well be that some useful amendments might be suggested. The Bill was not in its main features entirely new to their lordships. Lord Onslow had introduced a Mental Treatment Bill in 1923, to which their lordships gave a second reading, and which, he thought, was based on the same principle, so far as the major issues were concerned, as this Bill. He had no fear but that their lordships would welcome the present Bill as heartily as they welcomed that one.

Some Extracts from the Report of the Royal Commission.

The Royal Commission was presided over by Mr. Macmillan, and no opportunity should be lost of expressing the sense of public gratitude that they all ought to feel for his conduct in presiding over that Commission. The subject was extraordinarily difficult and complex. The Commission consisted of twelve persons drawn from all political parties and from all shades of thought, and, after going exhaustively into all these matters, the chairman succeeded in presenting a Report which was unanimous, except in one particular. That was an achievement and was also an encouragement and a support to anyone who attempted to legislate on the recommendations of that Commission. He would quote two or three short sentences from that part of the Report, which would strike the note on which he wanted to invite their lordships to deal with the Bill. The Report said :—

"The keynote of the past has been detention ; the keynote of the future should be prevention and treatment."

And, further :—

"Contrary to the accepted canons of preventive medicine, the mental patient is not admissible to most of the institutions provided for his treatment until his disease has progressed so far that he has become a certifiable lunatic. Then and then only is he eligible for treatment. . . . Certification should be the last resort in treatment, not the prerequisite of treatment."

If they were to adopt the analogy that the Royal Commission thought they ought to have between mental disease and any other forms of disease, it surely would be rather absurd not to treat a disease until some symptom had reached a very aggravated stage. What would be thought of modern medicine if they did not treat a case of scarlet fever unless and until the patient had come out in spots and was distributing infection to the community ? What would be thought if they did not treat people with an ordinary fever until they had shown that they had it by running out into the cold with a temperature of 102°, and running the risk of pneumonia ? This idea was not as new as might be supposed. As far back as 1860 the Commissioners in Lunacy stated :—

"The chances of recovery are much greater when the patients are placed under treatment in an early stage of the attack than when the disorder has been allowed to remain unchecked for some time."

Again, in their Report for the year 1881 they stated :—

"For 40 years and more we have directed our endeavours towards securing the early treatment of mental disorder upon

which, according to all experience, recovery so materially depends."

Sir Frederick Willis's Statistics.

The present Bill was an effort to give statutory form to these aspirations, and he thought it was justified by a sentence which he would quote from some articles in the *Times* that were written by Sir Frederick Willis, a former Chairman of the Board of Control, dealing with the present position. He called their lordships' attention for the moment to this sentence:—

"The evolution of asylums from mere places of detention to real hospitals has taken place."

That was to say, an asylum was no longer a prison. It was no longer a place where they merely confined a man in order that he could not do harm to himself or others. It was not primarily a place where they confined him for that purpose, but it was a place where they sent him for curative treatment in the hope that it would enable him to rejoin his fellow men. In that same article there were some very interesting statistics of the incidence of insanity which are as follows:—

Incidence of Insanity.

A = First admissions per 10,000 population.

Year.	A.	Year.	A.	Year.	A.
1869	4·07	1909	5·04	1923	4·93
1879	4·46	1919	5·25	1924	4·41
1889	4·58	1921	4·91	1925	4·46
1899	4·94	1922	4·94	1926	4·48

Recovery-rate.

Number of Recoveries to 100 Admissions.

Year.	A.	Year.	A.
Average—			
1869 to 1878	38·84	1920	32·21
1879 „ 1888	39·91	1921	32·52
1889 „ 1898	38·81	1922	32·29
1899 „ 1908	37·22	1923	31·64
1909 „ 1918	32·69	1924	34·86
1910 „ 1919	32·27	1925	31·84
		1926	31·85
		1927	31·43

The first statistics dealt with the incidence of insanity, and ran from the year 1869 to the year 1926, and this was the comment that Sir Frederick Willis made upon them:—

"These figures support the statement that the incidence of the disease has not been materially reduced."

The change per 10,000 of population was from 4·07 in the first year to 4·48 in the last year. They also did not support the contrary statement that was sometimes made that insanity was very largely increasing, and to that extent they were satisfactory. They were very hopeful that, if the system proposed by this Bill was adopted, the recovery-rate, or rather the number of recoveries, might be improved. Perhaps he should make it clear that the technical recovery-rate, if it meant the rate per hundred of certified persons to recover, might very well become worse, because they were hoping that all the people who were successfully treated under this Bill would never become certified lunatics, and would therefore be taken out of the recoverable class to which that percentage applied. But they hoped that the total recoveries would be larger and that they would be more quickly effected.

Three Important Points.

Describing the Bill itself, the noble lord said that it really only contained three main matters of importance. The first, Clauses 1 to 4, related to the voluntary boarder, a person who was sufficiently intelligent to ask for treatment, and to wish for treatment. Clause 5 dealt with the temporary boarder, a person who was not in that position but who had to be treated against his will, but only for a time. Those were two important points dealing with patients. Clauses 11 to 15 gave a reconstitution of the Board of Control, to which a great deal of importance was attached. It was enough to say that the Board of Control were now constituted under an Act of 1845, to suggest that possibly the time had come when some amendment might be useful. The other clauses in the Bill were less important. Clause 1 covered a person suffering from mental disorder who was desirous of voluntarily submitting himself to treatment, and who made a written application. He might, without a reception order and without formality beyond the written application, be received as a voluntary boarder, and, in the case of an unmarried person under the age of 18, the will, the voluntas, was transferred to the parent or guardian. That was possible now in the case of most licensed houses. It was sometimes possible in the case of single care, but it was not possible for the poorer class of the community. The present rate-aided mental hospital, or, as it used to be called, the pauper lunatic asylum, had no provision for receiving the voluntary boarder, and at the Royal Commissio evidence was given of most distressing cases of people wh felt they they were becoming more and more unstable, mor and more upset, but that a little rest, a little treatment would probably set them right again. But they were unabl to obtain that treatment from a recognised county asylum because there was no power to admit them, and they had t go on until they had become so bad that they were certifiabl before they could be treated. That proposition has onl to be stated to show its absurdity.

Single Care of the Voluntary Boarder.

There was another point, of course, about the voluntar boarder, and that was the danger which any doctor suffere who took such a person into single care, and who was alway liable to prosecution for harbouring an uncertified lunatic He was not allowed to take charge of a person who wa certifiable unless he was certified. These people were no intended to be certifiable people; it was hoped that the would never reach that stage, and there would be som protection here in the fact that the early treatment wa recognised as a possibility. He called special attention t Subsection (3) of Clause 1, by which a person who was receive as a voluntary boarder, although he had entered voluntarily was not allowed to leave at a moment's notice. He mus give 72 hours' notice. In a sense it might be said that the were imposing on the voluntary person imprisonment; in purely legal and technical sense that was, of course absolutely correct; but it was quite plain that it would no be safe, and it would not be in the interest of the patient to allow him to leave at a moment's notice, since the ver occasion when he would be insisting on leaving, and requirin to leave, would probably be just that occasion when he ha become so mentally unbalanced as not to be able to loo after himself or give himself proper care. This period o delay of 72 hours, therefore, which was by no means neces sarily interposed in every case, but only where the medica officer thought it necessary, gave the opportunity either fo the patient, as very often happened, to come back to a bette mind before the 72 hours were up, and to say, "I wil withdraw my notice and stop," or, if it had unfortunately become necessary, to proceed to the extreme measure o certification. Without that provision, it might well happe that the treatment would fail of effect and that the patien would destroy the whole value of it by his impetuous actio in some special moment of excitement, or owing to som irritation caused by something that had happened. Wha were the protections of those patients? In Clause 2 thei lordships would notice that notice of a patient's reception was to be given within two days to the Board of Control That notice was equally to be given to the Board of Contro if he died in or departed from the institution where he wa being treated; and, finally, should the patient becom incapable of volition, should he no longer be able to exercis a choice, or a will, he was not to be kept as a voluntary boarder for more than a month; but before the end of tha period he had to be discharged unless either he had again become capable of volition—a thing which often happened— or steps had been taken to certify him. In all these cases the Board of Control was the body that the public might rely upon to see that the patient was not unfairly treated.

The Earl of ONSLOW: Will the voluntary boarder come under the provisions of Clause 5, temporary treatment, i he becomes incapable of volition?

Earl RUSSELL: Yes, and I think that that period of one month would probably be used in order to apply Clause 5 to him. Continuing, the noble lord said he hoped that might be possible in every case where it was not necessary to proceed to full certification. The effect upon the minds of the Royal Commission of all the evidence they heard, including the evidence from the Board of Control, was that the real safeguard for every person, either insane or alleged to be insane, or partially insane, who was detained or under treatment anywhere, was the existence of the Board of Control itself—and by this Bill the powers of the Board of Control were to some extent increased. If notice was given to the Board of Control there could be no secrecy, if a visit was paid by the Board of Control there could be no concealment, and there could be no deception of the experienced officials that they would send to visit. That was really far more of a safeguard to patients than any other safeguard, but he would deal with that more fully on Clause 5. Under Clause 3 a commissioner, that is, not necessarily a member of the Board of Control, but a commissioner as provided by a later clause—an official visitor of the Board of Control—might at any time visit a voluntary boarder, and he might report on the case, and then the Board of Control, if they were of opinion that his state of health was unfit for him to remain as a voluntary boarder, might order the superintendent to discharge him, or might take steps to deal with him, if necessary, as a person of unsound

mind. With those protections there could be very little to be said against the voluntary boarders. The man entered of his own free will, his maximum detention was 72 hours if he gave notice to leave, his maximum detention was one month if he became incapable of free will, and at all times he had over him the controlling hand of the Board of Control, who could give orders as to what in their view was proper to be done in his case. That did not seem to the Minister of Health to leave much opportunity for abuse.

The Temporary Boarder.

Now he came to what was perhaps a little more contentious—namely, Clause 5. That clause provided for what was called the temporary boarder, a person who was suffering from mental disorder, incapable of volition and likely to benefit by temporary treatment. In his case, if an application was properly made and a proper medical certificate was given, he might be detained for six months. That period of six months was a period in which, according to the evidence and the statistics, a very large number of recoveries took place. It might not be, perhaps, as long a period as would really be useful, but the Minister of Health had been very moderate in his estimate and had only suggested detention for six months. In what way did the circumstances in which such a person was detained differ from the circumstances of full certification? So far as the application was concerned, there was no great difference on which he need dwell. The application must either be made by the husband or wife or a relative. If not, it must state why it was not made by them and what the interest was of the person making it. The patient must then be examined by two doctors. In the ordinary case of certification of the rate-aided patient only one doctor was required. But the great difference was that there was no interposition of the justice of the peace. In the view of the Government the two doctors provided a far greater safeguard than any number of justices of the peace, and it was provided that one of the two doctors was either to be his usual medical attendant—that was in Subsection 3—or, if not, he was to be an official person officially appointed who could have no interest of an improper character in the matter. The Royal Commission suggested a rather different form of treatment for the same purpose by what was called in their report a provisional order, and they did introduce the justice of the peace. The provisional order had been thrown over by the Ministry of Health because, although the intention was to remove the stigma of certification, it was fairly obvious that in a very short time it would have been held as exactly equivalent. One had the doctor, the justices, and all the other incidents of full certification. Therefore, this suggestion was put forward. What harm was that likely to do? He would read a short quotation from the report of the Royal Commission.

"That in practice instances of sane persons being wrongfully certified or improperly detained must be of the rarest occurrence. We think it proper to record that in none of the cases which were investigated by us were we satisfied on the evidence that improper detention had been suffered."

They went on to say in connexion with another matter:—

"Ill-usage is not deliberately or systematically practised in mental institutions."

His next sentence was again a quotation from Sir Frederick Willis:—

"The only hope of reducing the incidence of insanity and improving the recovery-rate is to alter the law so as to allow and encourage the early and skilled treatment of persons mentally ill."

On the point of the justices of the peace the Royal Commission said that they reluctantly recommended retaining the justices of the peace. They recommended it merely because they were afraid of Parliament and uninformed public opinion. But they added this sentence to which their lordships would give full weight:—

"If we were free to consider exclusively the medical treatment of the patient we should have little hesitation in accepting this suggestion."

That was the suggestion of certification without the justices.

Modern Methods in Mental Disease.

There still existed in some places the feeling which was aroused, possibly naturally and justifiably, nearly 100 years ago against confinement in asylums and asylum treatment. For that feeling there existed no justification to-day. Every person connected with these institutions devoted his whole thought and his whole attention to curing his patient if he possibly could and, if he could not entirely cure him, at least to ameliorate his condition. The fear which then existed was a fear which need exist no longer. So far as rate-aided institutions were concerned, there was no temptation to them to detain the patient one day longer than they could help. They were full; they were overfull; they had difficulty in finding accommodation. The trouble recently had rather been, perhaps, the other way—that sometimes people were discharged almost before they were fit to be at large. He submitted that they should recognise now that a doctor was not that sinister figure which in former times he was represented to be, anxious simply to confine a man to a dungeon for life, but that he was treating mental disorder in exactly the same way as he treated any other disease, with a sole view to its cure. When they used such phrases as "liberty of the subject"—and no one attached more importance to real liberty of the subject than he did—let them reflect upon what the circumstances were. If their daughter had a fever was she not restrained in bed instead of being allowed to run out in the cold air to die of double pneumonia? They did not invoke the justices to do that. They did not even invoke the ordinary certificate. They did it as a matter of course. If one of their lordships was delirious and in a fever he would be without volition within the meaning of this Act for the time; he would not know what he was doing. He would not appreciate that he was being treated. Nobody hesitated in those circumstances to restrain personal liberty until the time when it was necessary to restrain it was passed, and that restraint was, of course, in the obvious interest of the patient. When the patient had recovered the patient was grateful for it. Precisely the same thing happened in the case of mental treatment. The vast majority of these patients were grateful when they recovered for the treatment they had received and recognised the good that had been done them. Therefore they ought not to be led away by mere words on this matter.

Visits to Mental Patients.

There was still another thing to be remembered, and that was the number of visits which might be paid to these patients. First of all, there was the Board of Control entitled to visit at any time and as often as they liked. Then there was the superintendent of the asylum himself who, of course, visited his patients regularly, though they might regard him as an interested party. In the case of the rate-aided asylum, there was the visiting committee or, in the case of the licensed house, the visiting justices. Then there were the patient's friends who were at liberty to visit the patient and hear his own account, for what it was worth, of his treatment. Finally, in the case of patients who had property, they had the Lord Chancellor's visitor. So their lordships might take it that these people were, and would be, well protected. In Subsection 9, in addition to the Board of Control's visit, within one month the patient was to be visited by two members of the visiting committee or, if not, by two of the visitors of licensed houses, and that after that visit they were to sign a statement either to the effect that it was proper the patient should continue to be detained, or that it was not proper, and then they should within two days again report to the Board of Control stating their opinion.

In Subsection 12, dealing with the powers of the Board of Control, it was provided that at any time they might order that a person received as a temporary patient should be discharged, or that steps should be taken to deal with him as a person of unsound mind. He thought that the public really had no reason to fear these provisions. The whole object nowadays was to assimilate the treatment of mental disease to the treatment of other disease. For his own safety, and sometimes for the safety of other people, it was unfortunately essential that the patient should be placed under restraint and deprived of his liberty, which was sometimes only an incident and might be of only a few days' duration. That it should be necessary to put him upon the stigma of full certification for that purpose, or that he should have become so bad that he must be fully certified before they treated him at all, was a thing which could no longer be tolerated. The provisions in this Bill were likely to do a great deal to prevent people ever reaching the stage of certification, and to empty, in that sense, the certified wards, and to send the people back without that stigma which was a very serious stigma both in the matter of reputation and in the matter of employment.

Reconstitution of the Board of Control.

Clauses 11 to 15 were the clauses which reconstituted the Board of Control, and this reconstitution was in accordance with the views which the Royal Commission expressed. As a member of that Commission he welcomed it, and he would explain the present position. There were about twelve Commissioners, some medical and some legal. They had the duty not only of regulating policy and principles, but of visiting all these various institutions which this and the principal Act imposed upon them. The result had been that they were so busy running about the country

that they were never able to have real consultative committee meetings in London, as they should have, to decide upon the principle and the policy to be applied. These clauses proposed to divide the Commissioners into two parts. There would be five in all who would constitute the Board of Control, and the idea was that those five should have primarily as their duty the cöordination of the control of all the general matters relating to administration, of which there were a great many—provision of drugs, the qualification of nurses, the staffing of asylums, the construction of asylums, and the thousand and one matters of policy that were proper to be centred and fully discussed: and those five people would be able to meet regularly, and without interruption, and discuss these matters. They would be called the Senior Commissioners. There would be other Commissioners, and there would also be Assistant Commissioners, and those Commissioners and the Assistant Commissioners would primarily do the visiting that was required. Clause 13 provided that one Commissioner might carry out visits which were at present sometimes required to be made by two. In a great many cases the law required two Commissioners to visit when there was no sort of reason why more than one should do so. It had been found impossible to carry that out for some time now on account of the difficulty of the numbers; but under this clause, as the Commission would now be constituted, the visiting would primarily be done by the Junior Commissioners and the Assistant Commissioners.

Five members of the Board of Control would meet regularly and control policy, and would, of course, themselves visit these institutions from time to time in order to keep abreast of what was being done, and to learn with their own eyes what was going on. Under Clause 11 there was to be a Chairman. That was in Subsection 1. In Subsection 2 there was to be a legal Commissioner, a medical Commissioner and a woman. That accounted for four, leaving one place vacant which could be filled up by another medical Commissioner, or as might be thought most desirable. Ths existing Commissioners who were not members of the new Board of Control would continue as Junior Commissioners, although that word was not used in the Bill, and there would also be Assistant Commissioners. Subsection 7 provided that such salaries should be paid to these Commissioners as the Minister and the Treasury might determine. The Royal Commission expressed a very strong view that the position of the Chairman of the Board of Control was so important and so responsible that a substantial salary should be attached to it. Clause 12 mainly provided that the Chairman should be primarily responsible for the arrangements. The only other clause he need call attention to was Clause 15, giving a power to make rules, which was, he thought also, in the Bill of 1923. The Royal Commission attached a great deal of importance to this reconstitution of the Board of Control, because it became very evident to them that it was impossible for the work to be done as it should be done under the present Constitution, and perhaps it was, from the point of view of administration, a reform which would be as useful as any reform could be.

Clause 6 required the local authorities to provide the necessary accommodation for temporary patients. It was not likely to increase their total accommodation. In fact, they hoped on the whole that in the end it would diminish it. Clause 7 provided for the appointment of a Visiting Committee. Clause 8 provided for the circumstances which had arisen under one or two Private Acts, such as the Maudsley Hospital, where special circumstances applied.

Granting of Certificates; The Question of Immunity.

Coming to the miscellaneous clauses, he would call attention to the substituted Subsection 2 in Clause 16, which was an attempt to provide some further protection for the medical men who gave certificates. Recent actions, particularly, perhaps, the Harnett case and other actions, had not unnaturally frightened medical men, and they were very chary of giving certificates for which they might be shot at, particularly as in the Harnett case, twelve years later. It was a very grave responsibility for a professional man to take. It not only costs him money, it might ruin him professionally; and the result was that after that case there was a very great shyness on the part of doctors in giving these certificates in proper cases. No one could blame them for that. They were not paid more than an odd guinea of two and they were taking a very serious risk. The Royal Commission was pressed by the doctors to give them complete immunity. Those on that Commission who were lawyers felt that that would be contrary to the principles of the law, and that they could not go as far as that. The doctors themselves said, when asked: "No, we are not asking, and we do not ask, immunity for a rascal or a rogue or even for a thoroughly reckless person. But we do say it is a little hard that people who are exercising their profession honestly and to the best of their ability should be shot at in this way."

The Earl of ONSLOW: Does this immunity apply to certificates regarding people not capable of volition under Section 5 of this Bill?

Earl RUSSELL: I am not sure, but I think it is intended to.

Viscount BRENTFORD: Yes, if the noble Lord looks at Subsection 2, he will see it refers to anything done under this Act.

Earl RUSSELL: Yes, I think so. I would not like to answer offhand, but I think it applies to this, too. Continuing, the noble lord said that the Royal Commission considered this matter very carefully. The legal members gave attention to it, and took advice for several days and talked the matter over, and finally recommended the form of words which were now embodied in the substituted Subsection 2. The effect of these words was not to give the doctors immunity, but to shift the onus.

The Bill said:—

"... such proceedings shall ... be stayed on such terms as to costs and otherwise as the Court may think fit, unless the Court is satisfied that there is substantial ground for alleging that such act was done in bad faith or without reasonable care."

He could not help feeling that that would present some difficulty to His Majesty's judges, but there were statistics containing somewhat similar provisions on which they now and then acted. There was a statute about vexatious actions, and other statutes of that kind. What it really meant was that the plaintiff would have to satisfy the judge *in limine* that he had some sort of a case. It did not follow that it was a good case, or that he would win it, but he would have to satisfy the judge at an early stage that he had a prima facie case and that there was something which properly required investigation. It was not by any means a final protection to the doctors—very far from it—but it was some protection, and he hoped it might do something to protect them from suffering from legal actions when they had done the best they could.

Urgency Orders.

Clause 17 made urgency orders applicable to rate-aided persons. Curiously enough, urgency orders were only applicable to private patients. Why, he did not know. It was a useful form, and the rate-aided person could only be—so to speak—taken in charge if he was found wandering or in other circumstances when he was dangerous to himself or to others. This provision would give the opportunity of making an urgency order in all proper cases. Clause 18 was one to which a good deal of importance was attached. The people maintained in rate-aided mental hospitals were called pauper lunatics, the place in which they were maintained was called a pauper lunatic asylum, and the whole thing was done under the poor-law. The extraordinary result of that legislation was this. Their lordships would hardly credit it, but there was no doubt that what he was saying was correct. If a person became suddenly mad in the street, was taken by a relieving officer to the workhouse, was there certified and sent to an asylum, even if subsequently it was discovered that he was a person of means, even if he repaid to the poor-law authorities the whole of the expenses to which they had been put, he became and remained a pauper. That was clearly a ridiculous state of things. It was desired now—and the passing of the Local Government Act last session made it possible—to assimilate the treatment of this form of disease with the county medical services. This clause provided that:—

"A person shall not be deemed to be in receipt of poor relief or be deprived of any right or privilege or be subjected to any disability by reason only ..."

of anything done to him under this Act or under the principal Act. It was time that was done.

Clause 19 was merely a provision enabling county councils to use those workhouses which would come into their possession under the new Act. Clause 20 carried out what he had just spoken about, the change of name. The change of name implied a change of spirit, and the treatment would be different, and therefore it was appropriate that these hospitals and the people who were treated in them should receive new names and new appellations. He would say one word about the things which were not done under this Bill. It had not made a complete code for obvious Parliamentary reasons. It had not assimilated completely the method of certification in private and pauper cases which for historical reasons no doubt differed in the Lunacy Act of 1890. That would have meant rewriting the complete code and it had therefore been left over.

Licensed Houses.

The Bill had done two things which met the points that mattered; it had given the urgency order to the rate-aided persons and had removed the pauper stigma from the

te-aided cases. Neither had the Bill dealt with the vexed estion of licensed houses. So vexed was the question of ensed houses that it was the only question on which the oyal Commission disagreed. There were six on one side d six on the other. But the time had come when Parliaent must some day or other make up its mind what it as going to do about licensed houses. The licensed house as an institution for the treatment of insanity, which was n by a doctor or several doctors, or at any rate had to staffed by a doctor, whoever was the owner, for private ofit, and the public were perfectly right, no doubt, in oking with the very gravest suspicion upon places of that nd.

When Parliament last dealt with this question in 1890, adopted a quite illogical and a quite indefensible half-y house attitude. The existing private licensed houses re allowed to go on; no new licensed houses were allowed be created. No number of beds were allowed to be added those already in existence in the licensed houses then isting. In effect, Parliament said: "We are not quite re whether this thing is so bad that it ought to be swept ay altogether, but at any rate we are not going to let it increased," and the number of beds in 1890 was the mber of beds up to this date. That was not a logical titude. He would not say which of the two other attides was right, but it was obvious that one must be right. ther a licensed house was a necessary institution serving beneficent purpose in the case of a private patient who uld afford to pay for treatment, or it was an evil that ght to be swept away. Actual inconvenience was caused this because in fact licensed houses were not so geoaphically distributed as to be convenient. That had thing to do with this Bill, but as he had mentioned what as not in it he thought he ought to mention the matter on hich the views of the Royal Commission were divided lf and half. He had been through the Bill very carelly with the Chairman of the Royal Commission and he ad authorised him to say that he welcomed it as a most seful instalment of the reforms which the Royal Comission proposed.

Liberty of the Subject.

Viscount BRENTFORD said that for a certain time while he Royal Commission was sitting he occupied the position Minister of Health, and therefore he was in somewhat ose touch with the Board of Control and the questions, far as the administration was concerned, which were bmitted to the Royal Commission. For many years the uestion how best to deal with insanity had troubled Parliaent and the country, and he was very glad to be able associate himself with Earl Russell in what he said in gard to the modern view of the treatment of insanity—at it should be taken at the earliest possible stage and put as far as it could be put upon the same lines as dinary disease. But, of course, there was distinctly a fference between the disease of insanity, whether it was ere lack of volition or complete insanity, and every other hysical disease to which flesh was heir to. That was, of ourse, the question of the liberty of the subject. For a ouple of hundred years at least there had been commissions nd inquiries and Acts of Parliament of every kind, and efore the Act of 1890, which was really the foundation of he Lunacy Laws, there were 40 or 50 Acts dealing with his question. Running throughout the Act of 1890 was oticeable the meticulous care of Parliament for the liberty f the subject. While he (Lord Brentford) did not intend oppose the second reading of the Bill, there would be rtain points to be raised on the Committee stage which ught to be mentioned at once because they appeared to e of considerable importance. He hoped Earl Russell, hen he had heard what these points were, would consult ith him as to necessary amendments in order that the Bill ight go through in a satisfactory form. He wanted to lear uncontentious points out of view, and he entirely ccepted the view of the Commission that there was no illreatment, or rather that no cases of ill-treatment were roved to them. That, however, did not quite go far nough. Earl Russell had told them quite frankly that here was both Parliamentary hesitation and uninformed riticism in regard to the question of the liberty of the ubject. Under the existing law whenever a man or woman ad to go into one of these homes, private homes, singlease homes, or rate-aided institutions, there had to be an quisition of some kind or another by some kind of judicial uthority. The great inquisition had now almost gone into esuetude, that was the inquisition by a master in lunacy ith, or without, a jury. There was a petition for a recepon order certified by two medical men, and then there as a safeguard that the petition must be presented to a pecial justice of the peace who had the power, if he so esired, to see the patient before the reception order was ssued. That was not only a safeguard for the patient, ut for the medical men themselves. Earl Russell was proposing to take away a great deal of the legal responsibility of medical men and at the same time he took away the one great safeguard both for the medical men and the patient who was supposed to be placed in a hospital.

The Young Person under Eighteen.

If one looked at the Bill it would be seen that the voluntary boarder was dealt with under Clause 1. Earl Russell referred to such a person as a man or woman who desired—rightly and sensibly desired if they liked—to place himself or herself under control for the purposes of being benefited by medical treatment in a mental hospital. He agreed that if a man or woman had sufficient sense to realise the desirability of treatment he or she might quite rightly place himself or herself there, but the noble Earl had referred to another case, and that was the case of a young person under the age of 18. Why 18 was fixed he (Lord Brentford) did not know, but he supposed that anybody over 18 was for the purpose of that clause to be treated as an adult entitled to put himself into a mental home. The case of the young person under 18 he thought should be most carefully considered by their lordships' House, which had always protected the liberty of the subject. Take the case of a boy or girl of 17 who might be a little silly, as the expression was used in some parts of the country, who might be also a great burden at home, troublesome to the parents. That young person, without any assent on his or her part, a boy or girl of 17, nearly 18, might be placed as a voluntary patient—there was not much that was voluntary about it—on the written request of the parent, the guardian, or a person who acted in the position of guardian. In his (Lord Brentford's) view the Bill needed amendment in that respect. There was not even to be a medical certificate, much less any judicial authority. It was merely left to the parent or guardian to say: "I am very worried by Tom or Jane, who is very troublesome. I will lock him (or her) up." Under the Bill he thought it was quite possible to do that. Of course he knew that there was a Board of Control over and above all cases, but Earl Russell had tried to prove too much in regard to the position of the Board of Control. If the control of the Board was so effective in regard to these people who might be placed under voluntary detention, or under Clause 5 in temporary detention, because they were incapable of volition—why trouble at all about medical certificates, why trouble at all about the reception order which still, he took it, would exist under the old law for the man who was flagrantly and patently insane? It was rather remarkable to retain, as the noble Earl said in bringing in his Bill, the greatest safeguards, including the judicial safeguard, in the case of the man who was flagrantly and patently insane, and whom everybody would put into an asylum, while for the more doubtful cases the safeguards were swept away. The noble Earl must reconsider the first clause of the Bill. As regards adults, he (Lord Brentford) would prefer the age to be 21 rather than 18, and he was not sure that the young man or woman of 18 or 21 ought to be allowed to put himself or herself into a mental hospital for treatment without any medical or judicial certificate. That was the position under the Bill, and he was not satisfied that parents or guardians or "any person who undertakes or performs . . . the duty of a parent or guardian"—it was a curious expression—ought to be allowed so put people at the age of 18 into homes for medical care.

The Meaning of "Volition."

If they turned to Clause 5 relating to the temporary treatment of persons without full certification, they found a reference to people who—he thought this was a new expression; he had not been able to find it in any Act of Parliament relating to lunacy—"were incapable of volition." It was difficult to know quite what that meant. The gradations of lunacy were so many and shaded from one to another so easily that he thought the noble Earl had tried to find a new expression to provide for these temporary cases. He wondered whether the noble Earl would consider him (Lord Brentford) incapable of volition if he said: "I am blowed if I will go into a hospital." He would use no stronger language than that. The patient might be slightly insane, but he had enough volition to say: "I will not go in"; and yet he might be a person for whom treatment would be highly desirable. He thought that this portion rather needed amending, and he was certain that there must be an amendment dealing with the question of a judicial decision. The Government had thrown over the Commission and the report which Mr. Macmillan, Earl Russell, and the present Attorney-General had signed. The noble Earl had signed that document, as did his colleagues, including the present Attorney-General, and though they signed it with reluctance the very fact that they signed it with reluctance meant that they were so

impressed that, though they would have liked a Bill in the form in which the noble Earl had introduced this Bill, they were convinced that the jealousy of the law of England for the liberty of the subject was such that it was unwise and undesirable to have it. He (Lord Brentford) appealed from Earl Russell as sponsor of this Bill to Earl Russell as a member of the Commission who signed the report, and he earnestly asked him that when the Bill came to Committee some form of judicial inquiry—he did not want to be too dogmatic—should be grafted on to it before any man or any woman who was incapable of volition, which meant in the incipient stage of insanity, who was unable to understand what he was doing or what was being done for him, should be locked up in any form of mental hospital without, as in the past, some form of judicial inquiry. That was the more essential because of what the noble Earl said about transferring the onus of proof (Clause 16) in regard to the medical man. He (Lord Brentford) was willing and anxious to do all that he could in that respect. He well knew, as a lawyer and as one who had held Ministerial office in the other House, the scandal—he thought that was not too strong a word—of certain actions taken against medical men. They wanted to get rid of that. He should have liked the opinion of one of the judges upon this proposal of shifting the onus of proof. He was prepared to do all that he could to help the Government, but, if the medical man was to be given this protection, at least the patient must have the protection of a judicial inquiry that he had up to the present time. They were taking away with both hands. They were taking away both the judicial inquiry and the right to sue the medical man who might have made a mistake in these matters. But more than that. If their lordships would look at this clause of the Bill it did not only apply to the doctors.

"If any proceedings are taken against any person for presenting any such petition or for signing or carrying out, or doing any act with a view of signing or carrying out, any such order, report, or certificate, as mentioned in sub-section (1) of this section . . ."

—and so on. It was not only the doctor. He did not know why it had been thought necessary to put into the Bill this protection, not only for the doctors but for the person who signed the petition for the reception order, the uncle, the wife, the parent, or the guardian. At least, there was no reason for transferring the onus of proof in regard to them. But he quite definitely asked the Government to consider that point also before the Bill reached the Committee stage. With the other clauses he largely agreed. With regard to the Board of Control, he thought it desirable that there should be a more centralised board. He would like to hear from the noble Earl more about the composition of the Commissioners, and he knew that Lord Onslow was very keen indeed that the Board of Control should be strengthened, particularly the medical element in it. He was quite sure that after the House had heard his noble friend the Government would be prepared to accept a reasonable amendment in that direction. There was one other thing in regard to the transfer of powers from the Minister of Health to the Board of Control, about which the noble Earl said nothing. He had not referred to all the Acts of Parliament, but he (Lord Brentford) had been through the schedules, and there were certain of those powers which he thought ought to remain in the hands of the Minister. After all, the Minister of Health was a Member of Parliament, and, as a Minister, he could be called to account for the exercise of his powers in the House of Commons or in that House. The Board of Control could not be so called to account. They might say, of course, that the Board of Control was appointed by the Minister, and the Minister had some shadowy control—not so much if this Bill became an Act as he had to-day; and he would like the noble Earl to consult with the Minister as to how far it was necessary to transfer all those powers. If their Lordships read them carefully, they would see that it was too great a transfer of powers from the Minister to the Board of Control. In this Bill there were the germs of great good, and, taken as a whole, it would very largely improve the medical position, the medical care, and the medical treatment, particularly the incipient medical treatment of those who were a little bit over the border line between sanity and insanity. At the same time, while that was important, it was perhaps still more important that that Parliament should guard the liberty of the subject.

The Medical Aspect.

Lord SANDHURST said that, speaking in general terms, he approved the Bill. The Government were very wise to deal only with the most pressing aspects of the matter. Unlike Lord Brentford, he was extremely glad that the Government had had the courage to differ in some respects with the Royal Commission, and not to connect the question of temporary treatment with any judicial legal proceedings. It seemed to him that what they neede to do was to emphasise the medical aspects of the matte and to dismiss from their minds any question of placin the patient in the position of one who was a sort of crimin standing his trial. It was very important, both from th point of view of the patient's treatment and that of the educa tion of the public, that the medical aspect of the case should b emphasised as it was in this Bill. Another provision whic he particularly welcomed was one which Earl Russell ha not mentioned—the after-care of patients by local authorities or with the assistance of the local authorities throug after-care associations. After-care was nearly, if not quit as important as the treatment during detention. That di not apply only to poor people. He would be glad if the los of volition for a month did not automatically put an en to the status of the voluntary boarder. Up to now the Boar of Control had, he believed, exercised a discretion in regar to the position of voluntary boarders, and he suggeste in regard to Clause 2, Subsection 3, that instead of requirin the voluntary boarder's status to be terminated in the cas of loss of volition, notice should be given to the Board Control, and they should have power, as they had unde the next clause, to determine whether the patient was non-volitional case and should be certified. He knew tha the period of certification was a deterrent to persons wh might take advantage of the position that they coul acquire as voluntary boarders. In Scotland the patient wa allowed to retain his position as a voluntary boarder so lon as he did not insist upon the right to be discharged. H was very pleased to see that the period of notice wa increased to 72 hours. There should be a little mor discretion in regard to non-volitional patients. There wa a provision in the Mental Treatment Bill of 1923 that, i the case of a non-volitional patient who showed signs recovery, but had not completed his recovery at the end six months, the Board of Control should be able to exten the period of six months for a further three months, and necessary for another three months after that, provide that it did not exceed twelve months in all. That was provision which he would very much like to see added t this Bill.

The Power of Discharge.

He very much regretted that one recommendation of th Royal Commission had not been adopted. On page 93 their report the Commission commented on the power the petitioner in regard to the discharge of a patient, an pointed out that the power might be used to the detrimen of the patient, because the only restraint upon it was tha the medical superintendent might certify that the patien was dangerous or unfit to be at large. The Commissio then went on to recommend that he should also have powe to certify that discharge to the petitioner would be contrar to the welfare of the patient. If rules were made unde Subsection 5 of Clause 5 of the Bill, he hoped that there would not be unqualified power to direct the discharge the patient, and that regard would be had in any rules tha the Board of Control might make to the recommendatio of the Commission in that respect. He should also like t inquire as to the qualifications of the proposed Assistan Commissioners. He was not quite clear from what Ea Russell had said, and from his reading of the proposa in the Bill, whether Commissioners would be appointed i the future as well as Assistant Commissioners. He wishe to emphasise the importance of the qualifications of Assistan Commissioners being at least as good as those of the Com missioners of the present day. He also thought that th legal element ought still to be recognised as having som value in the qualification of a Commissioner. A furthe suggestion he would make was, that in the appointment assistant lady commissioners regard should be had t nursing qualifications. He was anxious as to whethe provision for shifting the onus would be sufficient to reliev the minds of the legal profession, particularly having regar to the real increase of responsibility. There was no doub that the intervention of a magistrate greatly relieved medical man of responsibility. He had observed in th course of his studies that there was judicial authority f doubting generally whether the sole and legal cause detention was not the judicial act of the magistrate, and n at all that of the certifying physician. But that woul certainly not be so in regard to the non-volitional case Therefore he thought that the position of the medical ma who had to take a serious responsibility should be strengt ened as far as possible. He was afraid that he did not s any very great protection in the shifting of onus, becaus as things stood at present, if an action was brought a medic man had to go into court prepared with all the evidence justify his position, and it was a very poor case which cou not produce some prima facie evidence which threw the on on the medical man. Therefore, if possible, he would li to see some provision inserted which would make t

osition of the certifying physician, or recommending hysician, somewhat safer than it was at present.

Legal Enactment and Informed Opinion.

Lord DAWSON said that the Bill appeared to him to make n attempt at long last to adapt legal enactment to informed pinion. The Bill would be rendered nugatory unless the ouse could persuade itself to disentangle its old ideas about achinery, for it was useless to have a new idea and seek embody it in legislation unless they were prepared to ake a new view of their methods to correspond to the ewer methods of their idea. That was the first and general iticism he would make of the speech of Lord Brentford. his idea had been growing for years. Informed opinion ad been wanting reform, and the public had gravely ffered because it had not had the reform. He took it at the object in mental as in bodily disease was early agnosis and early treatment with a view to the prevention more grave maladies arising. As the present law existed, bstacles were placed in the way of such early diagnosis and eatment. The law was based on the assumption that ental ailment was insanity, insanity which was the final sult of many deranged mental processes, and there had own up, therefore, in the public mind the notion that ny kind of mental disease was associated with some slur, me disability, some permanent disadvantage, inflicted on at person and on his family. The result was that anybody ho was afflicted with mental ailment, and the friends of that tient, unconsciously entered into a conspiracy to prevent at ailment being handled, for the simple reason that they ew there was only one way of that condition being treated, d at any rate there was a danger, if it was thus treated, that patient being dubbed insane, and treated as an sane person. To his mind, therefore, it was necessary make the machinery of the Bill as new and fresh in its ape and form as the ideas which inspired it. If they left hat they thought of as insanity and came down to mental rangement, they would find that it was constantly side side with physical derangement. It was often a matter of ance whether a patient who had been ill suffered from a ental or a physical complication. There was a close nnexion; the two were often blended with each other one stage as distinct from the end result—namely, sanity. The two conditions needed to be treated as arly as possible alike, They wanted the world to look on the one as on all-fours with the other. He would ve a simple example. Take a patient afflicted with phoid fever. There were certain complications which llowed on typhoid. It was a matter of chance whether at person suffered from a clot on the brain or from some mporary mental derangement. Why should they treat e differently from the way they treated the other? It ight be that they had been restraining that patient in the ute state of the illness, restraining him, if necessary, rough delirium, and why should they not apply the same edical treatment to the mental complications as they did the bodily complications? They had to keep constantly fore them in building up any new Act of Parliament that w conception. With civilisation such as existed to-day, ith the increasing speed and strain of life, with that aracteristic of civilisation in which the material progress as going too far ahead of man's power of adaption, it would evitably follow that they would get a larger number of mporary mental troubles; and they would find a blend. hey would find a physical trouble followed by mental mptoms, and the contrary. There was a greater merging between the one and the other. The fact was the disease, he might use the expression, bred less and less true. conformed less and less to type. In the days of acute fections, when the causes of disease took the form of an vasion by a virulent agent or infection from without, e force of the external agent was such that it reduced e sufferers almost down to a common type, with the sult that the type of illness was relatively easy and complicated to treat and manage. But in these days hen acute infections were gradually being wiped away, hen the external agents were less strong, the colour and e pattern of disease was more likely to be determined in reater degree by a man's make-up, his family history, his vironment, the strain he had been liable to meet. The sult was that they got a more complex picture than in ys gone by, and in that complex picture they very ten found such conditions of mind as the House was now scussing. He would, therefore, plead with their lordships approaching that question that they should see to it, not ly that they had buried the old ideas of mental ailment, t that they saw that the machinery was new in its tlook, and not cramped by a too close adhesion to the achinery of previous Acts of Parliament. The Bill as a really considerable advance, which would have e support of all the best thought in the medical ofession.

The Voluntary Boarder Class.

He came now to the first class of mentally afflicted people. Temporarily mentally afflicted people—namely what he might call the voluntary boarder class. He would prefer to call them mental patients. He (Lord Dawson) could see no objection, but rather an advantage, in protecting the young up to the age of 21, and strengthening the clause by not giving sole power to the parents, but providing that there should be a medical certificate. That would be an improvement in the Bill. The newest and the greatest idea in the Bill was that part of it which referred to those of lost volition. A large part of the benefit which was going to accrue from the measure would depend on the wisdom and courage of Parliament in the clauses that set forth that idea. Take the persons who had lost volition. That was a condition which quite commonly followed physical illness. Were they going to say that in the case of a woman who had puerperal fever and lost her volition, that before anything could be done to the patient they must seek a judicial authority? If they were going to do that they would remove the benefit of the clause, and would revive all the old prejudicies which were entangled round the old Acts. He would ask them to believe that technical knowledge had grown, that the medicine of to-day was not the medicine of 50 years ago. It was true of medicine as of any skilled calling that it became so technical that they had to trust the people who had studied the calling. That was going to be a problem of the Government in the future. So technical and so extensive and so rapidly did knowledge grow that Government departments would not be able to master all the knowledge of this or that skilled calling. They would have to fall back on the skilled advice of each profession in turn. Medical men now had greater knowledge and greater judgment. There was a public opinion rising up in the profession that grew stronger each year. It was the public opinion in the profession which was the great safeguard against abuse. If they once introduced judicial authority, wholly unsuited to judge of the question and more and more unsuited every year, two things would happen. They would not have the advantage of this great part of the Bill. It would not be taken advantage of by the patients, nor would the doctors try to make them take advantage of it. They were not going to have their skilled opinions overhauled by local magistrates who did not understand the A.B.C. of their profession.

Viscount BRENTFORD:—Does the noble lord intend that to apply in the future to the case of the wholly insane?

Lord DAWSON said he was dealing entirely with these difficult cases of mental illness. Just as he did not want to go to a magistrate to ask if he might restrain a delirious patient, he did not want to go to him to restrain a patient who was suffering from a complication after that illness. When they came to certified insanity, it was another problem. That patient was in a state of disablement. He was so disabled that either for his own safety or for that of the community he had to join a cloistered class. They would therefore make such a serious inroad on that patients liberty, and for such a length of time that it was necessary to have more control in the case. The question of temporary loss of volition—there were ample precautions in the clause—should be left to the decision of medical men—two if they liked. But there should be no interference in that kind of symptom, any more than with the physical symptom, by any kind of outside authority. He thought that the two clauses dealing with voluntary boarders and with those persons who because of physical illness had temporarily lost volition, if they were applied and carried out without undue restraints and crippling provisions, would go very far to prevent much mental disease and a great deal of mental suffering, and would add to the sum total of the health of the community.

The EARL of ONSLOW said that they were now asked to reduce the number of the paid Commissioners to five, of whom one should be legal and one should be medical. This medical man would be really the Chief Medical Officer of the Board of Control, and the responsibility on the medical officer seemed to be a very heavy one. He wondered whether it would not be safer to have two medical Commissioners.

A Measure of Reform.

Lord DANESFORT welcomed the Bill as a long overdue measure of reform. It seemed to him, however, an extreme provision that a parent or guardian of a young person under 18 should be able to lock up a child, or ward, by simply alleging that the child was suffering from mental disorder. He doubted himself whether Clause 16 was sufficient to protect medical men. The man who brought an action against a doctor must have an exceedingly bad case if the defendant could get the action dismissed on application under Clause 16. He hoped that before the Committee stage arrived, Earl Russell might be able to devise some really substantial protection for the medical profession.

The Earl of CRANBROOK said that some noble Lords had a very poor opinion of the medical officers in charge of institutions. He could not conceive it possible that any medical officer would receive an unfortunate child into an institution who had been brought there by his parents if the child was in a completely sane condition. One point that had not been touched upon was the question of authorities being allowed to have out-patient clinics. That would be a great step in advance. He hoped the time would soon come when out-patient clinics for the treatment of incipient cases, or cases already discharged, would be established all over the country.

Reply to the Debate.

Earl RUSSELL, replying to the debate, said he regarded out-patient clinics as a very valuable feature in treatment. As to the question of protection for the medical profession the provision in the Bill was the very best that all the legal skill brought to bear on the matter could think of. But if their lordships were prepared to extend it further he did not know that he would be prepared to oppose it. As to the views put forward by Lord Brentford perhaps the noble Lord would consult with him, or, better still, with the Minister of Health, in order to see if anything could be done to adjust Lord Brentford's view with the opinion held very strongly by everyone who knew about the matter. He (Lord Russell) felt, however, that if anything too formal was insisted upon, Clause 5 would lose its entire value. He could assure noble Lords that the utmost attention would be paid to their suggestions, and the Government would welcome any assistance in making the measure a better Bill.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 27TH.

Health of Public Aircraft Pilots.

Mr. LEES asked the Under Secretary of State for Air how many seaplanes were employed on the Imperial Airways' route from Genoa to Alexandria; how many pilots were available for this route; what rest period was arranged for these pilots; whether there had been any cases of sickness amongst the pilots during the last few months; and whether the Air Ministry took any steps to assure itself that pilots in public aircraft were in good health before starting on a journey.—Mr. MONTAGUE replied: I assume that my hon. friend is referring to the normal service which runs via Genoa. He is no doubt aware that that service has been temporarily suspended. For the normal route from Genoa to Alexandria three flying boats were employed and four pilots were available for the service. They were only engaged in flying duties on three days out of ten, and I understand that there was not an undue amount of sickness among the pilots during the last few months. As regards the last part, under the existing regulations, pilots of public aircraft are required to be medically examined at least every six months for the renewal of their licences, and in order to ensure the maintenance of their efficiency they are also required to be re-examined and pronounced fit before resuming air duties (*a*) whenever they have performed a total of 125 hours flying as pilot within any period of 30 consecutive days since their last medical examination, and (*b*) after illness or accident.

THURSDAY, NOV. 28TH.

Deaths from Silicosis in Sheffield.

Mr. HOFFMAN asked the Home Secretary the number of deaths from silicosis in Sheffield for the years 1928 and 1929 respectively, and the number of cases in which compensation had been paid under statutory rules and orders during the same period.—Mr. CLYNES replied: I have no accurate information in regard to the first part of this question, but it is estimated that the number of deaths from silicosis or silicosis accompanied by tuberculosis was 28 in 1928 and 35 in 1929. Compensation was paid under the Refractories Industries Scheme in 12 cases, including one fatal case, in 1928, and in ten cases, including three fatal cases, in 1929. Under the Metal Grinding Scheme there were 12 cases, including one fatal case, in 1928. Figures for 1929 are not available yet for the metal grinding industries nor for the sandstone and various industries schemes, which only came into force in the early part of this year.

Prison Doctors and Infliction of the Cat.

Mr. BENSON asked the Home Secretary the number of cases during the past three years in which, owing to the effect upon the prisoner, the prison doctor had intervened to postpone the completion of the infliction of the cat in order that the prisoner might recover sufficiently to stand the completion of the flogging; and the number of cases in which more than one postponement had been necessary.—Mr. CLYNES replied: There has been no such case in the last three years, and from inquiries made it has been ascertained that officers with over 30 years' experience of the prison service have never heard of such cases. If a medical officer stops corporal punishment his intervention is final, and there is no further corporal punishment.

Inspection of Vivisection Experiments.

Mr. FREEMAN asked the Home Secretary the number of inspectors of vivisection experiments; whether any or all of them were men who had had a medical training; whether he would consider the appointment in future of men known to be primarily interested in the welfare of animals; and whether he would appoint some women inspectors.—Mr. CLYNES replied: There are two inspectors, both of whom have had a medical training. There are no vacancies at present and no further appointments are in contemplation. Should a vacancy arise, the candidate with the best qualifications, irrespective of sex, will be appointed.

Women Medical Officers in Prisons.

Mr. LOVAT-FRASER asked the Home Secretary whether there were any women medical officers in women's prisons or sections of prisons; and, if not, whether he would consider the desirability of appointing them.—Mr. CLYNES replied: There are two women medical officers at Holloway Prison, and there is a woman medical officer at Aylesbury Borstal Institution. At other prisons where the women form only a small proportion of the prisoners, the difficulty hitherto has been that the appointment of a woman medical officer would mean adding to the staff and paying two officers to do work which can be done by one.

Sexual Offences against Young Persons.

Dr. PHILLIPS asked the Home Secretary whether he was now prepared to say what action he proposed to take to put into operation the recommendations of three departmental committees on Sexual Offences against Young Persons, on the Treatment of Young Offenders, and on Metropolitan Police Courts and Juvenile Courts respectively.—Mr. CLYNES replied: Various recommendations of these committees not requiring legislation have already been brought to the notice of the courts. Some of the recommendations have already been passed into law, while others have been noted for legislation at a suitable opportunity. As soon as the state of public business permits the Government is anxious to introduce a Bill to amend the Children Act, 1908, and the recommendations of these committees are being taken into consideration in the framing of the Bill. As regards the Committee on Metropolitan Police Courts and Juvenile Courts, its recommendations do not require legislation, and steps have been taken, or are being taken, to give effect to all of them, including the recommendations in regard to the reorganisation of the juvenile courts in London.

Decrease in Overcrowding.

Mr. SIMON asked the Minister of Health whether he had evidence as to whether the overcrowding, as revealed in the 1921 census, had in general increased or decreased since that date in the slum areas in different parts of the country.—Mr. GREENWOOD replied: I have no direct evidence on this subject, but more than a million and a quarter new houses have been completed in England and Wales since the date of the census of 1921, and this number is greatly in excess of normal requirements. It may, therefore, be assumed that overcrowding has in general decreased.

Local Authorities and the Control of Caravans.

Major OWEN asked the Minister of Health whether, in view of the difficulties which were being experienced by local authorities with respect to caravans and other similar dwellings and the permanent nature of many of these dwellings, he would introduce legislation granting local authorities more extended powers to deal with such structures.—Brigadier-General CLIFTON BROWN, Mr. COCKS, and Mr. OSWALD LEWIS asked similar questions.—Mr. GREENWOOD replied: My attention has been drawn to this matter, and I have received resolutions from a number of local authorities. I am advised that most, at any rate, of the trouble could be met if local authorities exercised more thoroughly and vigorously the powers which they now possess, and I am not satisfied that further legislation is needed. I am always pleased to give local authorities what assistance I can if they consult me on their particular difficulties.

Undulant Fever.

Lieut.-Colonel FREMANTLE asked the Minister of Health the number of cases of undulant fever in England and Wales during the last five years; if he had any evidence showing whether there was any connexion between that disease

and contagious abortion in cattle; and whether any combined research work was being carried out into the subject by his department, the Medical Research Council, and the Ministry of Agriculture.—Mr. GREENWOOD replied: Undulant fever is not notifiable in this country, and no exact figures of the number of cases which have occurred are available. I understand, however, that 14 cases have been traced as having occurred in England and Wales during the period referred to. An inquiry into this disease has been made by a medical officer of my department, and his report, which has recently been published, contains evidence, mainly from foreign sources, showing that cases of undulant fever in man have been causally related to cattle affected by contagious abortion. The whole subject is receiving careful attention by my department in coöperation with the Medical Research Council and the Ministry of Agriculture and Fisheries.

Price of Graded Milk Licences.

Brigadier-General CLIFTON BROWN asked the Minister of Health whether, in order to encourage the production of cleaner milk, he would reduce the price of licences for Certified and Grade A (T.T.) milk which the producer had now to pay.—Mr. GREENWOOD replied:—The amount of the licence fees does not exceed the special cost of administering the grading scheme, and higher prices are charged for these milks than for ordinary milk. I am not at present satisfied that there is sufficient justification for a reduction of the fees but I will consider the matter further in consultation with my right honourable friend, the Chancellor of the Exchequer, when opportunity occurs for the general revision of the Special Designations Order.

Artificial Sunlight Treatment.

Dr. FORGAN asked the Minister of Health if it was the intention of the Government to extend the facilities for the preventive administration of artificial sunlight to mothers and children; and, if so, what steps he proposed to take to overcome any shortage of medical practitioners who were qualified for such work.—Mr. GREENWOOD replied: The extension of facilities for this form of treatment is a matter in the first instance for the local authorities. I am not at present aware of any shortage of doctors who have experience of this method of treatment.

Collection of Refuse in Open Dust-carts.

Mr. DAY asked the Minister of Health whether his attention had been drawn to the manner in which rubbish and refuse was still collected in some of the London boroughs in open dust-carts; and if he would consider introducing legislation to abolish open dust-carts not only in London but in all thickly populated areas.—Mr. GREENWOOD replied: My attention has been drawn to this matter. Legislation has not up to the present been considered to be necessary. Local authorities are increasingly making use of dust-carts with covers, and are encouraged by my Department to do so. So far as London is concerned, I think it will be best to wait until the Departmental Committee on London Cleansing have made their report.

Mental Defectives.

Major GLYN asked the Minister of Health how many defectives were being administered under the Mental Deficiency Act and what was the cost to the local authorities and to the Exchequer; what was the cost of the institutions directly under the administration of the Board of Control, and to what extent local authorities contributed; and how many defectives there were under treatment at these institutions.—Mr. GREENWOOD replied: The total number of defectives maintained in institutions or under guardianship at the joint charge of local authorities and the Exchequer on Jan. 1st, 1929, was 20,359, and there were 9,606 under supervision. The total cost for the year ended on March 31st, 1929, was £1,216,820. Of this expenditure £607,301 is borne by local authorities and £609,519 by the Exchequer. In addition a relatively small number of defectives was maintained in institutions or under guardianship at the sole charge of local authorities. Particulars of the numbers and cost are not available. The total cost to the Board of Control of State institutions directly under their administration during the year ended on March 31st, 1929, was £45,045, towards which £1838 was contributed by local authorities or relatives of patients. The number of defectives under treatment at these institutions on Jan. 1st, 1929, was 785.

MONDAY, DEC. 2ND.

Grants for Surgical Appliances.

Mr. DAY asked the Minister of Pensions the number of cases during the previous 12 months in which he was able to make grants for surgical appliances out of the voluntary funds at his disposal.—Mr. F. O. ROBERTS replied: During the 12 months ended Oct. 31st, 1929, 81 grants were made from the voluntary fund for the purchase of surgical appliances.

Malaria in Bengal.

Commander BELLAIRS asked the Secretary for India whether his attention had been drawn to the increase of preventible malaria in Bengal and the recent report of Sir Malcolm Watson to the Ross Institute for an inquiry; whether he would follow the precedent of Mr. Joseph Chamberlain, who instituted an inquiry that led to the stamping out of Mediterranean fever; and whether he would immediately promote liaison work with British Guiana where a similar problem with part East Indian population had been successfully dealt with.—Mr. WEDGWOOD BENN replied: So far as I am aware there has been no increase in malaria in Bengal in recent years. I understand that Sir Malcolm Watson's suggestion was that an inquiry should be made as to whether the embankments of the Ganges Delta produce conditions favourable to malaria; and, if so, whether a remedy could be found. This matter is now engaging the attention of the Government of Bengal. I may add that a chair of malariology will be established in the new Rockefeller Institute in Calcutta.

Lieut.-Colonel FREMANTLE: Is it not a fact that no policy has yet been given out that would really reduce malaria; that it requires a great deal more inquiry; and would it not be a good thing to institute a Government inquiry with the different departments concerned with India and the Colonies generally?

Mr. WEDGWOOD BENN: That is a much wider question. I have stated what steps are being taken in India.

Medical Appointments in India.

Major GRAHAM POLE asked the Secretary for India what action the Government of India intended to take in view of the rejection by the Indian legislative assembly of the proposal of the Government to appoint a European officer of the Indian Medical Service as a whole-time commissioner of medical qualifications and standards; and whether the creation of this post was proposed as an alternative to the creation of a Government commission on medical qualifications and standards or as an expedient pending the setting up of such permanent machinery.—Mr. WEDGWOOD BENN replied: The demand for a grant for the expenses of this appointment was not rejected by the Legislative Assembly as the House was adjourned before the termination of the debate on it. The Government of India are consulting the provincial governments as to the measures to be adopted to meet the situation and to secure the continued recognition of Indian medical degrees. The creation of the post was proposed as a temporary measure pending the establishment, by legislative enactment, of an all-India Medical Council.

WEDNESDAY, DEC. 4TH.

River Pollution on Dartmoor.

Major HILLS asked the Minister of Health whether his attention had been called to the danger of pollution of the Dartmoor rivers by opening china-clay works on Dartmoor; and whether he would consider, without interfering with what might be a valuable industrial enterprise, taking measures against pollution of those rivers.—Miss LAWRENCE replied: The answer to the first part of the question is in the negative. As regards the second part, the prevention of pollution is a matter for the local authorities, and no doubt this particular case will engage their attention.

School Children and the Schick Test.

Mr. FREEMAN asked the Minister of Health by what authority local authorities imposed the Schick test against diphtheria on school children; what evidence was there that it prevented diphtheria; what instructions were issued to the parents concerning the matter; how many children were so operated on in 1928 and how many times each; and what was the cost per head of each operation.—Miss LAWRENCE replied: Local authorities do not "impose" this test on school children. Parents are invited to have their children tested, and, if desired, immunised. The procedure is entirely voluntary. Local authorities are empowered to act for this purpose with the sanction of my Department under Section 133 of the Public Health Act, 1875, or Section 77 of the Public Health (London) Act, 1891. Advice is given to parents by the local authority, but no instructions are issued. As regards the second part of the question, my right hon. friend is advised that there is abundant evidence that the practice of active immunisation, applied to persons who have been shown by the Schick test to be susceptible to diphtheria, protects such persons against the disease. My right hon. friend has no information in regard to the last two parts of the question.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdrs. O. J. M. Kerrigan to *Vivid*, to *Comus*, and to *President*; T. Gwynne-Jones to *Fisgard*; C. J. Aveling to *Britannia*; G. H. Courtier to *President*; and E. Kennedy to *Resolution*.

Surg. Lt.-Comdr. D. H. Kernohan to *Comus*.

Surg. Lt.-Comdrs. (D.): J. L. Edwards to *Pembroke*, for R.N. Barracks, Chatham; H. J. Luck to *Fisgard*; W. E. A. Sampson to *Flora*, for R.N. Hospital, Cape of Good Hope; and D. Barker to *Effingham II*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lts. to be Surg. Lts.: G. O. Barber and E. C. W. Maxwell.

Proby. Surg. Lt. W. T. R. Chapman to be Surg. Lt.

ARMY MEDICAL SERVICES.

Lt.-Col. W. P. MacArthur, R.A.M.C., Professor of Tropical Medicine, Royal Army Medical College, to be Consulting Physician to the British Army in succession to Col. J. C. Kennedy, is proceeding to India on duty.

ROYAL ARMY MEDICAL CORPS.

Maj. J. Boyd relinquishes his temp. commn. and retains the rank of Maj.

Maj. A. Irvine-Fortesque is restd. to the estabt.

Lt. (on prob.) G. F. Harrison, from the secd. list, is rest. to the estabt.

Lt. (on prob.) E. G. C. Darke is secd. under the provisions of Art. 205, Royal Warrant for Pay and Promotion, 1926.

The undermentioned Lts. (on prob.) are confirmed in their rank: E. M. Hennessy and J. M. Ryan.

REGULAR ARMY RESERVE OF OFFICERS.

The undermentioned having attained the age limit of liability to recall, cease to belong to the Res. of Off.: Col. F. F. Carroll, late R.A.M.C., and Maj. J. B. Clarke.

TERRITORIAL ARMY.

Lt. J. N. C. Ford, late R.G.A. (Spec. Res.), to be Lt.

ROYAL AIR FORCE.

J. W. H. Steil is granted a temporary commn. as a Flight Lt. (Hon. Squadron Leader).

Flying Officer J. C. Neely is promoted to the rank of Flight Lt.

Flight Lt. R. A. W. Kerr is transferred to the Reserve, Class Dii.

DEATHS IN THE SERVICES.

Surg. Lt.-Comdr. Gilbert Malise Graham, R.N. retd., whose death after a long illness was recently announced, entered the Navy as a surgeon in 1914, and was subsequently appointed to H.M. *Emperor of India*, the Flagship of Rear-Admiral A. L. Duff in the Grand Fleet. Two years later he was appointed to the Naval Hospital at Malta, where he served till after the Armistice. In 1920 he joined H.M.S. *Truro*, and during his service with the Mine-sweeping Flotilla was promoted Surg. Lt.-Comdr. He retired in 1922.

POPLAR HOSPITAL FOR ACCIDENTS.—Hitherto this institution has been almost entirely supported locally. The Port of London Authority—which provides a fast ambulance for the transport of casualties—shipping firms, factory employees and patients, all contributed to the cost of maintenance, which amounts to £22,000 a year. The hospital was founded in 1855 to deal with dock accidents, was rebuilt in 1891, and has since then been six times enlarged, but the growth of the docks and shipping business and the increase in heavy motor traffic are such that the hospital has become seriously inadequate. One fourth of the accident cases are children, and recently in one week-end eight cases of fractured skull were admitted. It is stated that the pressure upon the out-patient department is so severe that patients have sometimes to wait four or five hours for their turn; 52,000 cases are dealt with annually. The X ray apparatus has been in use for 20 years and can deal only with ordinary fractures. It is now proposed to spend £30,000 on improvements, which will include an adequate X ray installation; and an appeal is about to be made for the money.

Medical News.

UNIVERSITY OF OXFORD: *Radcliffe Travelling Fellowship.*—An examination for a Fellowship of the annual value of £300, tenable for two years, will begin on Feb. 11th.

Candidates must have passed all the examinations required for the B.A. and B.M., degrees and must not have exceeded four years from the time of passing the last examination required for the latter. The successful candidate must devote himself during his tenure of the Fellowship to the study of medical science, principally abroad. The examination papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay. There will also be a practical examination in pathology. Candidates may offer in addition a special branch of either medicine or surgery.

Application must be made to the Regius Professor of Medicine before Jan. 29th, 1930.

UNIVERSITY OF CAMBRIDGE.—On Nov. 30th the following degrees were conferred:—

M.D.—R. J. Lythgoe and H. W. Eddison.

M.B. & B.Chir.—M. D. Nosworthy, J. M. Graham, and E. A. Trim.

M.B.—Frank Goldby and J. O. W. Bland.

UNIVERSITY OF LONDON.—At recent examinations the following candidates were approved:—

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

With Special Knowledge of Psychiatry.—F. T. Thorpe and Mary E. Tyars.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were approved:—

MASTER OF MIDWIFERY.

Lily A. Baker, N. R. Mucadam, W. G. Richards, and G. C. Soutter.

ROSS AWARD FUND.—In supplement to his letter on p. 1171 of our last issue Sir James Barr informs us that the Government of India have contributed the sum of £2000 to this Fund. The gift brings the total to £12,682.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The council of this Institute has appointed Prof. William H. Park, Director of the Bureau of Laboratories of the New York Health Department, to be Harben Lecturer for 1930, and Dame Louise McIlroy, Professor of Obstetrics and Gynæcology in the University of London, to be Harben Lecturer for 1931. The Smith Award for 1930 has been given to Dr. H. R. Kenwood, Emeritus Professor of Hygiene in the University of London. This award is made every third year to a medical officer of health "who is recognised as having done the most noteworthy work in the discharge of his official duties."

ORTHOPÆDIC HOSPITALS.—The annual report of the Shropshire Orthopædic Hospital and Agnes Hunt Surgical Home, Oswestry, records a slight falling-off in the number of child patients in consequence of the opening of children's orthopædic hospitals in different parts of the country; nevertheless 599 adults and 480 children were treated. At the end of the year Dame Agnes Hunt resigned her post as honorary superintendent. Of the income of £48,690, £41,243 was contributed by, or on behalf of, patients. An adjoining property has been purchased for use as a training college. In the school for physically defective children the junior classes are given a good grounding in the buying and selling of household goods, in specially constructed shops, with cardboard coins. The massage department gave over 30,000 treatments. During 1928 the admissions to Wingfield Orthopædic Hospital, near Oxford, numbered 338, of whom 191 were children; in addition, 65 private patients were treated; and over 18,000 out-patients were attended at the various clinics. The work increased considerably during the year, owing to increased publicity. Rebuilding is fast becoming an urgent necessity. The report of the North Staffordshire Cripples' Aid Society for the year ending March 31st last emphasises the need for a more adequate out-patient clinic and after-care centre. The special orthopædic work of the hospital is still being done, and in the coach-house and stables which were improvised for the purpose in 1918, and the work is greatly hampered by the insufficient number of beds. The orthopædic hospitals, it is pointed out, still have a nursing problem; since there is no standard, each hospital has to make the most suitable arrangements for itself.

WALSALL GENERAL HOSPITAL.—"The sheer impossibility of dealing adequately with an incessant stream of accidents" has, the annual report records, led to the erection of a new casualty department, opened in March last. There were 17,940 attendances in the orthopædic department and 7635 treatments and exposures in the X ray department.

BRISTOL HOSPITAL FOR CHILDREN AND WOMEN.—This hospital is to be enlarged at a cost of £60,000. The present building was opened in 1885, and many extensions and improvements have since been made. The proposed scheme of reconstruction includes the addition of an extra storey to two of the blocks provided with sunlight balconies for open-air treatment.

ENLARGEMENT OF WORTHING HOSPITAL.—Two new wards, forming a further instalment of the enlargement of this institution, were opened last week by Mrs. Arthur Lloyd, who has contributed £8500 towards the cost of the work. Since the extensions began in 1926 the number of beds has been increased from 46 to 78, and various improvements have been made at a cost of £42,000. The new wards (for women) contain 26 beds in place of the former nine, and new X ray and massage departments have been added.

ST. BARTHOLOMEW'S HOSPITAL, ROCHESTER.—The average cost of the 1858 in-patients admitted last year was £8 12*s.* 7*d.*; the out-patients cost 6*s.* 6*d.* each. An extension fund of £80,000 is being collected, and various extensions and improvements are in progress. A new pathological department has been provided, and there are to be new out-patient and casualty departments. Paying patients are now received at a minimum charge of three guineas a week, exclusive of medical and surgical fees.

DENTAL HOSPITAL OF IRELAND.—The annual report shows that in the twelve months under review over 8,000 patients attended, an increase of nearly 1000. Only 6 teeth were extracted without an anæsthetic. The Dublin schools sent 1075 children for treatment. Subscriptions amounted to no more than £381, "an amount not very creditable to a large city like Dublin." The Dental Branch of the United Kingdom has made a grant of £900. There are 50 students.

MANCHESTER STUDENTS' RAG.—A proposal has been made that the entire proceeds of the Annual Rag on Shrove Tuesday next year should be given for the purpose of building a new wing to the Cancer Hospital. After a full discussion the students of the University decided to leave the allocation of the funds to the Hospital Council, but have ear-marked £1000 each for the Christie Cancer Hospital, the Dental Hospital, and the North Manchester Maternity Hospital.

UNIVERSITY OF LIVERPOOL.—At the yearly meeting of the University Court on Nov. 29th the Vice-Chancellor announced that within the last six months the University had received something like £40,000 for the endowment of research—the greater part of it to be devoted to special fields. Upwards of £20,000 was to go for research in cancer and tuberculosis, another £10,000 to be devoted to research in any field of University study, and another £10,000 by various subscribers for the endowment of research in animal pathology in the severe diseases which from time to time decimated our herds of cattle.

DONATIONS AND BEQUESTS.—Mr. Alfred Hayes, of Hawkestone, Western Park, Leicester, left £2000 to the Leicester Infirmary and £1000 to the Home for Incurables, Leamington, Warwickshire.—Mr. Anthony Brown, of Pond End, Knaresborough, Yorks, left practically the whole of his estate to charitable and philanthropic objects. Amongst the bequests are £2000 to Harrogate General Infirmary to endow two beds in his name, £1000 to Royal Bath Hospital, Harrogate, and £1000 to National Institute for the Blind. The residue of the property is left between Newcastle General Infirmary, Harrogate Infirmary, and Leeds General Infirmary.—Miss Mary Ann Shelton, of Pinchbeck-street, Spalding, in addition to other bequests, left £2000 subject to a life trust equally between the London Hospital and the Cancer Hospital, Fulham-road; £1000 each to the London Hospital, Whitechapel-road, and the Cancer Hospital: £500 to the Royal Society for the Prevention of Cruelty to Animals.—Mr. John Cross, of South-drive, Harrogate, left, besides other bequests, £1000 to the York County Hospital; £200 to the Harrogate Infirmary; £100 each to the Yorkshire Home for Incurables, Harrogate, and the Rawson Convalescent Home, Harrogate.

STOCKPORT INFIRMARY.—The work of this hospital has for some time past been impeded by lack of room. Various extensions have been made, but it is still impossible to cope with the demands, and it has therefore been decided to build an entirely new hospital. A site of 14 acres has been purchased, upon which will be erected a building to hold 400 beds. The work, which will need five years for its completion, is estimated to cost £250,000. There are at present 130 beds.

BRADFORD MUNICIPAL HOSPITAL.—The report for 1928 by Mr. B. Holroyd Slater, the medical superintendent, shows that since 1920, the first year of municipal control, the number of patients admitted has increased by 86 per cent.—7176 as compared with 3804; the number of births by 314 per cent., and the number of operations by 418 per cent. Puerperal sepsis provided the largest number of cases (62 of infectious disease. There were 11 maternal deaths, 654 live births and 69 stillbirths.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Dec. 9th.—5 P.M., WAR. Paper:—Surgeon-Commander A. E. Malone, R.N.: Some Remarks on the Evolution of Naval Hygiene.

TUESDAY.—5 P.M., THERAPEUTICS AND PHARMACOLOGY. Communications and discussions: Dr. J. W. Trevan, Dr. T. Izod Bennett, Dr. D. T. Davies, Dr. L. E. H. Whitby, and others: Phenylhydrazine in the Treatment of Polycythæmia. Dr. Bernard Schlesinger, Dr. F. J. Poynton, and others: Nirvanol in the Treatment of Chorea.—8.30 P.M., PSYCHIATRY. DISEASE IN CHILDREN. (Members of the Child Guidance Council will also take part in the following discussion.) Special Discussion on: The Difficult Child. Speakers: Dr. Bernard Hart, Dr. Emanuel Miller, Psychiatry. Dr. Hector Cameron, Section for the Study of Disease in Children. Dr. W. Moodie, Miss Fildes, Child Guidance Council.

WEDNESDAY.—5.30 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Pathological Meeting preceded by a Discussion on Complications of Operations for Piles, to be opened by Mr. Cecil Rowntree (President of the Subsection). Cases and Specimens:—Mr Cecil A. Joll: Combined Abdomino-perineal Excision of the Rectum and Wertheim's Hysterectomy for Carcinoma of the Recto-vaginal Septum. Mr. Cecil A Joll: Abdomino-perineal Excision of Rectum for Endometrioma. Dr. H. J. B. Fry: Multiple Papillomatosis of the Colon with Double Primary Carcinoma of the Rectum. Dr. H. J. B. Fry: Diverticulitis with Carcinoma of the Rectum. Dr. H. J. B. Fry: Sacro-coccygeal Chordoma Simulating a Colloid Carcinoma of the Rectum. Dr. H. J. B. Fry: Colloid Carcinoma of the Rectum in a Young Subject, with Metastases in the Skull. Dr. H. J. B. Fry: Papilloma of the Rectum Removed by Perineal Excision. Dr. H. J. B. Fry: Secondary Melantoic Sarcoma of the Colon. Dr. Graham Hodgson: Cases of Diverticulitis.

THURSDAY.—8.30 P.M., NEUROLOGY. Short Papers:—Dr. James Collier: Ocular Paralysis in Diabetes. Dr. Macdonald Critchley: The Syndrome of the Anterior Cerebral Artery.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Dr. C. Worster-Drought: A Case of Dystrophia Myotonica. Dr. Terence East: Case of Polycythæmia Vera. Mr. Cecil P. G. Wakeley: Case of Large Chondroma of the First Rib in a Child. Dr. Harold Cookson: Specimen. Rheumatic Carditis, Pan-valvulitis. Dr. F. Parkes Weber: Combined Degeneration of the Spinal Cord, without the Blood Picture of Pernicious Anæmia. Dr. H. V. Morlock: Case of Familial Schiluric Jaundice. Mr. Harold Edwards: Severe Deformity following Burns. Dr. Dorothy Hare: Case of Congenital Morbus Cordis with Ascites. Dr. E. Stolkind: Case of Abnormality of the Gall-bladder. Dr. Norman Hill: Case of Amyotonia Congenital 5 P.M., OPHTHALMOLOGY. Clinical Meeting at the Royal London Ophthalmic Hospital, City-road, E.C.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Dec. 9th.—8.30 P.M., Discussion on: The Treatment of Head Injuries. To be introduced by Mr. Wilfred Trotter.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, Dec. 12th.—8.15 P.M., preceded by a Demonstration at 7.45 P.M. (at 11, Chandos-street, Cavendish-square), Prof. Warrington Yorke: Blackwater Fever.

BIOCHEMICAL SOCIETY.
FRIDAY, Dec. 13th.—3 P.M. (in St. Bartholomew's Hospital E.C.). Communications:—H. E. Archer and G. A. Harrison: The Effect of Reaction on the Heat Test for Bence-Jones' Proteinuria. W. H. Hurtley: Notes on the Determination of Iodine in Blood, &c. K. V. Thimann: The Precipitation of the Basic Amino-acids of Proteins by Phosphotungstic Acid. M. J. Rowlands and B. Wilkinson: Vitamin Content of Grass Seeds in Relationship to Manures. A. G. Norman: The Biological Decomposition of Plant Materials. D. R. P. Murray and C. G. King: The Stereochemical Specificity of Esterases. H. Chick and M. H. Roscoe: Stability to Heat of Vitamin B2 (Anti-dermatitis, Anti-pellagra). F. K. Herbert and M. C. Bourne: The Non-glucose Reducing Substances of Blood with Special Reference to Glutathione. B. W. Town: Isolation of Isoleucine from Gliadin. H. G. Reeves and E. T. Renborn: Some Properties of Dihydroxyacetone. J. M. Gulland and R. A. Peters: Observations on the Reducing Substances in Avian Blood. G. Graham: The Presence of Homogentisic Acid in the Blood of Patients with Alkaptonuria.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE. MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Lecture by Mr. John O'Malley: Inflammations of the External Ear. No fee.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. Wed., 6 P.M., Demonstration by Dr. T. F. Cotton. No fee.—SOUTH LONDON HOSPITAL FOR WOMEN, 103, South Side, S.W. Wed., 2.30 P.M., Demonstration by Miss Huxley (General). Open to women graduates only. No fee.—INFANTS HOSPITAL, Vincent-square, S.W., Afternoon Course, second week.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W., Practitioners' Course, second week.—Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE. Hammersmith, W.
MONDAY, Dec. 9th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Wards.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw, Medical Out-patients. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. Dr. Scott Pinchin: Medical Out-patients.
THURSDAY.—11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.
SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.
Daily, 10 A.M. to 5 P.M., Medical, Surgical and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Dec. 9th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations. 4.30 P.M.: Demonstration on Practical Neurology by Dr. L. R. Yealland.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.
MONDAY, Dec. 9th.—5 P.M., Mr. J. C. Dawes, M.I.Mech.E.: Disposal of Refuse.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.
THURSDAY, Dec. 12th.—9 P.M., Dr. T. East: The Electrocardiograph and its Use: A Practical Demonstration.

SOUTH-WEST LONDON POST-GRADUATE SOCIETY, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Dec. 11th.—4.P.M., Mr. E. T. C. Milligan: Modern Methods of Diagnosis of Rectal Diseases.

ROYAL ANTHROPOLOGICAL INSTITUTE.
WEDNESDAY, Dec. 11th.—5.30 P.M. (in the Polytechnic Hall Extension, Great Titchfield-street, W.), Prof. F. G. Parsons: The Anthropological History of the Modern Englishman.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Dec. 13th.—4 P.M., Dr. Dan McKenzie: Early Mastoid Operations.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Dec. 10th.—5 P.M., Dr. S. E. Dore: Erythemato-squamous Eruptions.
THURSDAY.—5 P.M., Dr. W. N. Goldsmith: Pigmentation of the Skin.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.
WEDNESDAY, Dec. 11th.—4.15 P.M., Clinical Meeting. Cases will be demonstrated in the wards. Tea at 4 P.M. Medical Practitioners invited.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Dec. 11th.—4 P.M., Prof. Winifred Cullis: Speed as a Psycho-Physiological Factor in the Life of To-day.

PEOPLE'S LEAGUE OF HEALTH, 12, Stratford-place, W.
FRIDAY, Dec. 13th.—6 P.M. (at the Medical Society of London, 11, Chandos-street, W.). Dr. R. O. Moon: The History of Medicine and the Part Played by the British Race.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Dec. 10th.—4.15 P.M., Mr. W. H. Hey: Post-operative Embolism.

ANCOATS HOSPITAL, Mill-street, Manchester.
THURSDAY, Dec. 12th.—4.15 P.M., Dr. E. W. Twining: X Ray Treatment of Hyperthyroidism and Blood Diseases.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, Dec. 13th.—3.30 P.M., Mr. G. Simpson: Cystoscopy.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, Dec. 11th.—4.15 P.M. (in the Victoria Infirmary), Dr. A. McLachlan: Skin Cases.

Appointments.

GALLOWAY, R. M., M.D. Edin., D.P.H., has been appointed Medical Officer of Health, Dewsbury.

MACKENZIE, J. J. R., M.B., Ch.B. Edin., Certifying Surgeon under the Factory and Workshop Acts at King's Cliffe, Northampton.

MASSEY, A., M.D. Leeds, D.P.H., Medical Officer of Health for Coventry.

Bolingbroke Hospital: CAREW-SHAW, E., M.R.C.S, L.R.C.P. Lond., Clinical Assistant Ear, Nose and Throat Department; WALKER, G. B. W., M.B., B.Chir. Camb., F.R.C.S., Resident Medical Officer.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital, 91, Finchley-road, N.W.—Hon. Radiologist. Hon. Surg. Reg. Also Two H.S.'s. Each at rate of £150.
Barnet, Herts, Wellhouse Hospital.—Obst. Res. and Asst. M.O. At rate of £250.
Barnsley, Beckett Hospital and Dispensary.—H.P. £140.
Bolingbroke Hospital, Wandsworth Common, S.W.—Hon. Anæsthetist.
Brighton County Borough Infectious Disease Hospital, &c.—Res. M.O. £350.
Brighton, New Sussex Hospital for Women and Children.—Radiologist.
Bristol General Hospital.—Surgeon, Asst. S., Asst. P., Clin. Assts., Dental S. Also Pathologist. All Honorary.
Bristol Royal Infirmary.—H.S. to Ear, Nose and Throat Dept. At rate of £60.
Burnley, Victoria Hospital.—H.S. At rate of £125.
Cairo, Egyptian University, Faculty of Medicine.—Two Surgical Tutors. £E35 monthly.
Canterbury, Kent and Canterbury Hospital.—H.P. £125.
Cardiff, Prince of Wales' Hospital.—Res. Surg. £350.
Carlisle, Cumberland Infirmary.—Pathologist and Bacteriologist. £900.
Chelsea Hospital for Women, Arthur-street, S.W.—Pathologist. £40.
Chester, Wrenbury Hall Tuberculosis Training Colony.—Res. H.P. £250.
Dorchester, Dorset Mental Hospital, Herrison.—Jun. Asst. M.O. £300.
Dreadnought Hospital, Greenwich.—Med. Supt. £300.
Eastbourne, Princess Alice Memorial Hospital.—Jun. H.S. At rate of £100.
Evelina Hospital for Children Southwark, S.E.—H.S. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250. Also Hon. Asst. Phys.
Greenock Royal Infirmary.—Two H.S.'s. Each £100.

Grocers' Company, Grocers' Hall, E.C.—Research Scholarships. £300.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hampshire County Council.—Asst. County M.O. £600.
Hove Hospital, Sackville-road.—Res. M.O. £150.
Huddersfield Royal Infirmary.—Res. Surg. O. £220.
Hull Royal Infirmary.—Second H.S. At rate of £150.
Italian Hospital, Queen-square, W.C.—Two Hon. Surgeons.
Leamington Spa, Warneford General Hospital.—Res. H.S. £165.
Leeds Jewish Herzl-Mosser Hospital.—Res. M.O. £100.
Liverpool Hahnemann Hospital.—H.S. At rate of £100. Also Hon. Path. £25.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.
London Lock Hospital, Dean-street and Harrow-road, W.—Second Anæsthetist. 1 guinea each attendance.
London University.—Geoffrey Duveen Travelling Studentship. £450.
Manchester Ancoats Hospital.—Asst. Pathologist. Also Med. Reg. and Surg. Reg. Each £100.
Manchester, Baguley Sanatorium.—Sen. Asst. M.O. £500.
Manchester, Salford Royal Hospital.—Res. Surg. O. £200. Also two Res. H.S.'s to special departments. Each at rate of £125.
Metropolitan Hospital, Kingsland-road, E.—Asst. S. Also Two Anæsthetists.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Nuneaton Borough.—Asst. M.O.H. £600.
Rochester, St. Bartholomew's Hospital.—Third Res. M.O. At rate of £175.
Royal London Ophthalmic Hospital, City-road, E.C.—Asst. Surgeon.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £180.
St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S.'s. £175 and £125 respectively.
Salisbury General Infirmary.—Two H.S.'s.
Scotland Dept. of Health, Bacteriology and Medical Statistics.—M.O.'s. £600.
Sheffield Royal Hospital.—Res. Anæsthetist. At rate of £80.
Sheffield Royal Infirmary.—H.P., H.S., Ophth. H.S., Asst. Ophth. H.S. Also Asst. Cas. O. Each at rate of £80.
Stafford, Staffordshire General Infirmary.—H.S. and H.P. At rate of £200 and £150 respectively.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. Pathologist. £250.
Wigan Infirmary.—Third H.S. £150.
Winchester, Royal Hampshire County Hospital.—Hon. Clin. Asst. for Ophth. Out-Patient Dept. Also Sen. Res. M.O. £200. H.S. £150.
Windsor, King Edward VII. Hospital.—Two H.S.'s. Each £100.
The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Windermere (Westmorland) and Wirksworth (Derby).

Births, Marriages, and Deaths.

BIRTHS.

ATKINSON.—On Nov. 28th, at Grosvenor-street, W., the wife of Dr. C. Hewitt Atkinson, of a son.
BELFRAGE.—On Nov. 30th, at 15, Somers-place, W.2, to Judith, wife of Dr. Douglas Belfrage—a son.
BROWNING.—On Nov. 28th, at Courtfield-gardens, the wife of Basil Browning, M.D., of a son.
JACOBS.—On Nov. 30th, at Maida Vale-mansions, W., to Dr. Elizabeth Jacobs, wife of Dr. L. Jacobs, of a daughter.
ROXBURGH.—On Nov. 26th, at Redington-road, Hampstead, the wife of A. C. Roxburgh, M.D., F.R.C.P., of a son.
SWAINE.—On Nov. 28th, at Beaumont-street, W., the wife of Dr. R. O. Swaine, Bedford House, Bognor, of a daughter.

MARRIAGES.

FERGUS—SMITH.—On Nov. 30th, Andrew Naismith Fergus, M.B., Ch.B., to Jean Elizabeth, elder daughter of Gilbert Smith, M.D., F.R.C.S., and Mrs. Smith, of Hindhead.
O'FLYNN—LEONARD.—On Nov. 26th, at Corpus Christi Church, London, by the Rev. Father E. O'Flynn, Surgéon-Commander J. A. O'Flynn, R.N., to Lynda Avis Lilian Leonard.

DEATHS.

BURKITT.—On Nov. 23rd, at Warneford House, Ravenstone, Leicestershire, after four days' illness, John Colley Smyth Burkitt, M.D.
BYRON.—On Nov. 25th, at "Bellgrove," Gunterstone-road, West Kensington, London, John Lean Byron, L.D.S. R.C.S. Edin.
COCKBURN.—On Nov. 26th, the Hon. Sir John Alex. Cockburn, K.C.M.G., M.D., aged 79.
DAVIES.—On Nov. 24th, Dr. Arthur Templer Davies, aged 71.
DEWAR.—On Nov. 27th, at Edinburgh, Thomas Finlayson Dewar, C.B., M.D., D.Sc., Department of Health for Scotland, aged 63.
MONTGOMERY.—On Nov. 28th, at Roebuck Park, Dundrum, Co. Dublin, Edward Hugh Montgomery, M.D., of Careysville, Fermoy, Co. Cork, aged 60.
SLOGGETT.—On Nov. 27th, suddenly, Lieut.-General Sir Arthur Sloggett, K.C.M.G., K.C.V.O.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices o Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE MECCA PILGRIMAGE, 1929.

A DOCTOR standing on the banks of the Suez Canal near Ismailia in June, 1929, saw a ship approaching from the south with a marked list to port. When she drew abreast of the watcher she proved to be a pilgrim ship; the afternoon being hot, the travellers had all crowded to the port side to catch what little wind was stirring. Their numbers were so great that they appeared to cover all the deck space, while the ship was unable to right herself from the list produced by their weight. It is hard to imagine the conditions on a ship so grossly overcrowded, especially when oriental standards of cleanliness are taken into consideration; moreover, the passengers generally prepare their own food, and latrine accommodation is none too plentiful on pilgrim ships.

The Egyptian Government has been making a determined effort this year to provide better conditions for pilgrims visiting Hedjaz. The "Khedivial Mail Line" received the concession for the transport of pilgrims, and the results of examination of their boats by the Egyptian authorities appears to have been satisfactory. The largest of these was authorised to take 1505 pilgrims and the smallest 742. The Egyptian authorities advise, however, that 1500 should be the highest number ever carried in future. They cite as an example of overcrowding the case of the *Plata*, a boat of another line, which carried 2000 passengers and three medical officers. Aboard this ship seven persons died between Djeddah and Tor; 11 were in hospital on arrival, four of whom were moribund; 51 were sent into hospital at Tor, of whom nine died. It is thought that the ship was short of provisions as a result of carrying a consignment of strange pilgrims before returning to pick up those for whom it had been chartered, and it is suggested that ships should not be authorised for such usage in future. The conditions on another ship, the *Riad*, were found to be extremely unsatisfactory; there was accommodation for only 363 pilgrims but 431 were taken; there was a lifeboat capacity only for 90 persons; washing and sanitary arrangements were hopelessly insufficient; the wireless apparatus consisted of a receiver only, and there was no operator on board. This ship was suspended from further transport of pilgrims by the Director of the Quarantine at Tor.

Attempts are now being made to vaccinate all pilgrims and to inoculate them against cholera before they reach Hedjaz. This year nearly all the pilgrims from the north received both forms of protection, as did those from the south who passed the island of Kamaran. Pilgrims from South and East Africa and from Yemen, Assyt, and Hadramout arrive in small groups, not by pilgrim ships, and probably receive neither vaccination nor inoculation. The problem of suitable protective measures is difficult to solve in view of the large numbers involved; this year it is estimated that 120,000 persons were present on the plains of Arafat on the first day of the feast. Statistics from Hedjaz are naturally difficult to obtain; the deaths from small-pox and dysentery show an increase this year over those recorded in 1928, but this may be because they have been more carefully observed. The water-supply to the pilgrims, which has sometimes been insufficient at Hedjaz, was plentiful this year as a result of a rainy winter. Condensers are available at Djeddah and Yamba.

There can be no doubt that the quarrantine arrangements at Tor, which include a hospital and an efficient medical and nursing staff, do much to prevent epidemics following the return of pilgrims to their homes. This year 29,358 persons passed through the settlement; only 43 deaths are recorded and autopsies were performed in all cases; six of these died of dysentery and two of typhoid; none of typhus, small-pox, or cholera. The stools of all cases receiving medical treatment were examined for the cholera vibrion. The danger to pilgrims from infected persons joining the pilgrimage from areas in which epidemics are in progress is considered in the report of the Conseil Maritime et Quarantenaire d'Egypte for 1929. Epidemics of small-pox occurred in Iraq and the Sudan between October, 1928, and April, 1929; there was a small epidemic of plague in Upper Egypt and a larger one (161 cases) in Morocco. There were 653 cases of typhus in Egypt and 32 in Palestine during the same period.

The yearly pilgrimage will remain a danger to all the countries from which pilgrims are drawn as long as the conditions of transport and accommodation remain as scanty and unhygienic as at present. Efficient reorganisation of the pilgrimage in every direction is needed and should be facilitated by the governments of the large number of countries involved.

ENLARGEMENT OF A DUBLIN HOSPITAL.

Jervis-street Hospital is the oldest of the Dublin voluntary hospitals, having entered its third century some 11 years ago. It was originally founded in Cook-street by six surgeons, and its rapid success caused its removal two years later to the Inns Quay, where the Four Courts now stand. When the site was wanted for the erection of the Four Courts nearly 60 years later, the governors bought the town house of the Earl of Charlemont in Jervis-street, and occupied it from 1786 to 1803, when it was replaced by a more commodious building. This in turn was replaced in 1887 by the present hospital. Various additions have since been made, of which the most important were a new out-patient department in 1910, and a new theatre block in 1919. Last week the Archbishop of Dublin opened a new wing, which contains a chapel, and improved accommodation for the Sisters of Mercy, who control the nursing, and for the resident staff. The hospital is now very thoroughly equipped in accordance with modern ideas. It is situated in the heart of the city, surrounded by many industrial works and crowded tenement areas. It deals, therefore, both with an exceptionally large number of accidents and with much sickness among the very poor. It is gratifying that the governors and medical staff are actuated by a progressing spirit.

MEDICAL PROGRESS IN CEYLON.

IN the annual general report for 1928, the section devoted to public health begins with the gratifying assurance that "there are few countries in the world in which medical aid is more generously distributed by the State than Ceylon." In proof of this it is mentioned that there are 101 government hospitals and asylums with provision for 10,250 beds. In Colombo, the capital, are situated a general hospital with 850 beds, an ophthalmic hospital, a lying-in home, a hospital for women (Lady Havelock Hospital), a hospital for children (Lady Ridgeway's Hospital), a bacteriological institute, a Pasteur institute, a dental institute, and a home for incurables. At Angoda, six miles from Colombo, there is a hospital for infectious diseases, with 122 beds. There are special dispensaries at Kandy, Galle, Jaffa, and Batticola for the treatment of eye diseases. There is a lunatic asylum at Angoda and two leper asylums—one at Hendala in the Western Province and one at Mantivu in the Eastern Province. As regards the prevention of tuberculosis, in Colombo there is the King Edward VII Ante-Tuberculous Institute, at Kandana there is a sanatorium of 72 beds, and at Ragama there is a hospital for chronic cases. In addition to government hospitals, the owners of estates have provided 81 estate hospitals. There are also 575 central and branch dispensaries provided by government, and 684 estate dispensaries.

A Year's Work.

Dealing with the work of the year, the report states that the campaign against ankylostomiasis was continued, and in addition to the treatment afforded to the general public at hospitals and dispensaries throughout the island, 107,435 school-children and 124,336 estate coolies were treated by medical officers of the campaign staff. The activities of the anti-malaria campaign also were maintained at Chilan, Kurunegala, Anuradhapura and Trincomalee. An ordinance for the prevention of mosquito-breeding has been placed before the Legislative Council. Quinine was distributed very widely throughout the island. The number of persons treated at the Pasteur institute was 1448.

During the year there were in Colombo 40 cases of plague, 37 of which were fatal, this being the second lowest number of cases of death on record since the first appearance of plague in 1914. Out of the 40 cases, 27 were of the bubonic type and 13 of the septicæmic. All the septicæmic cases proved fatal, while the three recoveries were among those suffering from the bubonic type. Plague broke out in Kandy in the last quarter of 1927, and before the end of the year there were altogether 30 cases (26 fatal). By the beginning of 1928 the disease was got under control, and there were only eight further cases (six fatal). There were five cases of cholera in the island, of which four were fatal, compared with 11 cases and six deaths in 1927. There were 16 cases of small-pox with one death, as against 27 cases and five deaths in 1927.

Vital Statistics.

The estimated population of Ceylon on Dec. 31st, 1928, was 5,421,861. The total number of arrivals during the year amounted to 289,762, and of departures to 237,670. Of the former, 93 per cent. came from India, and of the latter, 92 per cent. were bound for India. The racial distribution of the population was, at the time of the last census (1921) as follows:—Europeans, 8118; Burghers and Eurasians, 29,439; Sinhalese, 3,016,145; Tamils, 1,120,059; Moors, 284,964; Malays, 13,402; others, 26,469. The births registered during the year numbered 213,311 (108,841 males and 104,470 females), being higher than the number registered in any previous year since registration was introduced. The birth-rate was equal to 40·0 per 1000 of the estimated population, as against 39·5 in the preceding year, and 38·8 the average for the ten years 1918-1927. The deaths of 123,337 persons were registered in 1928, as against 113,853 in 1927, and 138,853 the average for the previous ten years. The death-rate for 1928 was equal to 24·8 per 1000 of the estimated population, and 3·1 per 1000 higher than that recorded in 1927. The average for the past decade was 28·5. The number of infant deaths in 1928 was equal to a rate of 177 per 1000 births, as against 160 in 1927, and 188 the average for the past ten years. The birth-rate in Ceylon is very high compared with that prevailing in some western countries. The infant mortality-rate is greatly influenced by the birth-rate, so that it is not an unusual feature to find a high infant mortality-rate in countries that have high birth-rates and a low infant mortality-rate in countries that have low birth-rates. Though the Ceylon rate when judged by the standards of advanced western countries appears to be unsatisfactory, there is not much cause for apprehension when the climatic and other conditions in the island are taken into account.

Causes of Death.

The classification of causes of death is based on the international or Bertillon system. This was originally introduced into Ceylon in 1911, and has since undergone a revision. The revision, which is that of 1920, has been in use here for the last two years only. Owing to the absence of compulsory certification of causes of death among a very large section of the population, the statistics, particularly of diseases requiring scientific knowledge for diagnosis, are of doubtful value, but there is reason to believe that a definite though slow progress in accuracy is achieved every year. Owing to lack of certification a very large number of deaths appear under the heading "pyrexia," which is admittedly a vague cause of death. This cause, which includes all cases of fever not otherwise defined, was stated in the deaths of 18,954 persons—or 14 per cent. of the total deaths. In the previous year 13,502 deaths were registered under the cause. There is no doubt that a considerable number of the deaths so registered were actually due to malaria, but in the absence of their being so stated in the returns by village registrars, the deaths are classified under the general heading "pyrexia." Another prolific cause of death in the island is infantile convulsion, from which during the year under review there were 16,042 deaths—or 12 per cent. of the total deaths. The death-rates from some of the more important diseases registered in Ceylon in 1928 as per million of the estimated population were:—pyrexia, 3553; infantile convulsions, 3007; pneumonia, 1658; diarrhœa and enteritis, 1655; dysentery, 646; phthisis, 634; malaria and malarial cachexia, 420; premature birth and congenital defects, 419; ankylostomiasis, 405; influenza, 367; puerperal septicæmia, 264; bronchitis, 239; enteric fever, 108; cancer, 103.

REGIMENTAL COLOURS OF THE INDIAN ARMY.

To the Editor of THE LANCET.

SIR,—I am collecting information regarding the regimental colours, past and present, of the Indian army, and should be particularly grateful if any of your readers could assist me in tracing some flags once in the possession of a Surgeon-Major Newton, who lived at Cheltenham many years ago.

I am, Sir, yours faithfully,

H. BULLOCK (Capt.).

East India United Service Club, St. James's-square, S.W., Dec. 3rd, 1929.

ROYAL SAMARITAN HOSPITAL FOR WOMEN, GLASGOW.

THIS hospital is to be congratulated on its first medical report. The period covered is from April 1st to Dec. 31st, 1928, during which time 2033 in-patients were treated and 1836 operations were performed. The classification of cases is done clearly on pathological lines and it should have considerable statistical value; a useful distinction is made between parous and nulliparous patients. It is hoped that the governors of the hospital will make the production of this report an annual event.

Dr. R. M. B. MacKenna desires to state that the public advertisements issued in the Seacombe district of Liverpool last week with regard to a lecture on a "lay" topic which he delivered on Nov. 24th, were issued without his knowledge or consent, and that he demanded their immediate obliteration within half an hour of learning of their publication.

An Address
ON
MODERN RADIOLOGICAL DEVELOPMENTS IN GERMANY.

elivered at the Annual Meeting of the Institute of Radiology, Incorporated with the Rontgen Society, on Dec. 6th

BY FFRANGCON ROBERTS, M.D. CAMB., M.R.C.P. LOND.,
SISTANT PHYSICIAN, IN CHARGE OF THE X RAY DEPARTMENT, ADDENBROOKE'S HOSPITAL, CAMBRIDGE.

I PROPOSE first to describe the remarkable strides hich radiology is making in Germany at the present ay; secondly, to say something of the economic pects of the movement; and thirdly, to offer a few ggestions for the improvement of radiology in this untry.

A MODEL INSTITUTE.

I shall begin by giving an account of the new diological institute at the Städisches Krankenhaus municipal hospital at Frankfort-on-Maine. This stitute, which is under the direction of Prof. olfelder, has only just been opened and is probably e most modern and the best equipped in Europe. he building consists of three floors and a basement. he basement is given up mainly to diathermy, ultra-olet light, and to photographic work other than the tual developing of X ray films. There are six bicles for diathermy, while for light treatment there e four double cubicles and a large room for children. The *ground floor* is entirely for radiographic agnosis. On one side of the main corridor are six rge rooms in all of which screening can be carried t. The first room is adapted for operative work ch as pyelography and myelography; the second, ird, and fourth rooms are for gastro-intestinal ork, the fourth being also used for the heart and ngs; the fifth is for the skull and teeth, and the sixth r the limbs. Each room is provided with two ressing-rooms which open at one end into the corridor d at the other into the screening-room. By this eans the preparation of patients is carried out with e minimum of inconvenience. Adjoining each reening-room is a small cabin containing the switch-oards. This cabin is separated from the screening-om by barium-brick walls and a lead glass window, t by an ingenious device the operator, while com-etely protected from X rays, can easily hear the structions called out by the person carrying out e investigation. The high tension apparatus—and is is a great feature of the institute—is housed on *mezzanine floor* directly above the control cabins and ressing-rooms. Thus the amount of apparatus in e screening-rooms is reduced to a minimum and a reater safety both for the apparatus and for those ho come in contact with it is assured. A window in e ceiling of the cabin permits the operator to read e output of the machine as registered on the clocks ove. On the opposite side of the corridor are the veloping-rooms, a large room for washing, drying, d viewing films, this room being also used for ctures, a kitchen for the preparation of barium eals, waiting-rooms both for ambulatory and bed tients, and administrative offices.

The *first floor* is for X ray therapy. This is rried out in two large cheerful well-ventilated rooms ith big windows. In each room are three large erapy tubes enclosed in so-called "cannons," in e design of which Prof. Holfelder has to my mind splayed great ingenuity. They project horizontally to the room from a semi-octagonal glass enclosure rough which they connect to the high-tension paratus placed on the floor above. They can be ised or lowered and rotated through a horizontal is with the greatest ease, with the result that any rt of the body can be treated with very little scomfort to the patient. They are also perfectly shock-proof; any part of the outside of the cannons can, in fact, be freely handled while the tube is in operation. A further point is that no radiation can escape unless a filter is in position. Patient, operator, and attendant are thus quite free from danger. There is nothing to alarm the patient or to give him a feeling of despair as is so often the case in rooms devoted to this purpose. On the contrary, he finds himself in a atmosphere of cheerfulness and hope. The control cabins are arranged as previously described for diagnosis. On the opposite side of the corridor are waiting-rooms and rooms for surgical dressings, for examining patients, and for special investigations such as basal metabolism. On this floor, too, are the director's room, offices, and a library.

On the *second floor* is the high-tension plant for therapy. These are of the "stabilivolt" or condenser type, the current being led below through gaps in the floor into the semi-octagonal enclosures already described and thence into the cannons. A small room at the end is for standardisation and is so arranged that any apparatus at will can be connected with the measuring instruments. The remainder of this floor contains storage-rooms for films, workshops, and quarters for the resident staff.

The cost of this building, excluding the actual apparatus but including the furniture, fittings, and wiring, was about £28,000, or £2 14*s*. per cubic metre. The expense was borne partly by the hospital—that is to say, by the State, for this hospital, like most in Germany, is State-controlled—and partly by the Allgemeine Ortskrankenkasse which is the largest insurance society in Germany. This society, by way of lessening its expenditure on X ray fees, had intended building its own department, but decided that the interests of economy would be better served by combining with the hospital.

The institute has been designed to cope with 120–200 radiological examinations and 90–120 treatments per diem. It may be thought that this accommodation would satisfy the needs of Frankfort with its 500,000 inhabitants. Such, however, is very far from being the case, for there are many other X ray departments in the town, and even in the same hospital there is another, attached to the medical clinic, where at least as much X ray diagnosis is being carried out as in Prof. Holfelder's institute.

OTHER RADIOLOGICAL DEPARTMENTS.

Passing now to other towns, I found that at Mannheim under Dr. Diederich there was a radiological department which would have more than satisfied me, but this was going to be scrapped and a more modern one built. At the large Burger hospital at Cologne under Prof. Grashey I saw an entirely new department on the lines of the one at Frankfort in course of erection. In some ways the most remarkable department which I saw was not in a hospital at all but belonged to the Allgemeine Ortskrankenkasse at Cologne. This society has built and equipped on the top floor of its head office what I can only describe as a model of its kind, though it is not so large as the one at Frankfort. Here Dr. Teschendorf and his assistants carry out from 100–200 examinations each day as well as a considerable amount of therapy. I was informed that though it is primarily intended for members of the society these are perfectly at liberty to go elsewhere for radiographic examination if they wish, while on the other hand members of other societies are admitted on a recognised scale of fees. Private patients are also taken to the mutual benefit of the society and its radiologists.

WHERE GERMANY LEADS.

I have said enough to show that Germany is overwhelmingly superior to this country both in the extent to which radiology is applied and also in equipment and organisation; and this is the more remarkable when the resources of the two countries are compared. It should be stated, however, that the liberality with which radiology is being endowed is part of the general policy of the Government to spend

money lavishly on all matters affecting the health of the nation, not medical services merely but also housing, public baths, recreation-grounds, and so on. A gigantic experiment in social welfare is in fact being undertaken, and many social observers are wondering whether the end is going to justify the means. But while it may be argued that Germany is erring on the side of extravagance it is, I think, indisputable that in this country the standard of equipment is far from satisfactory.

I can imagine few British radiologists returning from a visit such as mine without a feeling of envy towards their German colleagues, who appear to an outside observer to have no difficulty in obtaining all that they require. Criticism of the way in which radiology is carried out in this country has not been wanting. A year ago, for instance, Sir Thomas Horder complained that physicians' consulting-rooms were filled with worthless X ray films, while in the Annual Report of the Medical Research Council the fact is deplored that no definite school of radiotherapy has sprung up in England comparable to Vienna and other continental schools. While we must not lose sight of the fact that in the long run the man is more important than the machine and that an efficient radiologist with inferior apparatus is better than an indifferent radiologist with first-class apparatus, it may reasonably be replied to these criticisms that some allowance should be made for the technical limitations with which most radiologists in this country have to contend.

I should be sorry if any of my remarks were to be interpreted as casting a reflection upon the competence of British manufacturers. Nothing could be further from my intention. I saw nothing in Germany which so far as I could judge could not be made in England. My sympathies are very much with the British manufacturers, since in comparison with their German competitors they have a small market and must consequently experience great difficulty in expanding their business.

What Can be Done in England.

It appears to me that there are four directions in which this country should move without going to the lengths which Germany has gone.

(1) *Centralisation of apparatus.*—No other branch of medicine involves anything like so large a capital outlay, such heavy running expense, or such extensive accommodation. No other specialist starts practice at so great a financial risk. A surgeon, for example, is not expected at the beginning of his career to equip his own operating theatre and nursing home. The radiologist, unless he happens to be fortunately situated, may be compelled in order to make himself efficient to pledge his credit to an extent which the financial state of the district in which he works does not justify—and all this in order to provide himself with apparatus which is rapidly depreciating in value and is duplicated in the hospital where he works. In Germany the admission of private patients to the X ray departments of general hospitals is the rule, and all the radiologists with whom I discussed this question told me emphatically that they had no desire to burden themselves with their own apparatus. It is true, of course, that in Germany radiologists are paid for their ordinary hospital work, but then they need to be since the proportion of paying patients to the total population is lower there than in England. I am aware that there are many hospitals in this country where this practice has already been adopted with complete success. My point is that it should be carried a great deal further, especially in the poorer districts.

Is, then, private radiology as generally carried out doomed to extinction? I do not think so, since there will always be people who have an intense aversion to institutional treatment. But what I do believe is that as the work becomes more and more complex considerations of space and finance will make it increasingly difficult to practise radiology within the confines of a dwelling-house. Centralisation will mean greater efficiency as well as greater economy.

(2) *Payment to hospital for motor accident cases.*—This question is now very prominently before the public, and the claims of hospitals in this respect ha been well expressed by Sir Charles Harris in t *Times* of Nov. 30th. I need only call attention he to the fact that all such accidents of any severi require X ray examination.

(3) *Payment to hospitals from National Insuran Fund.*—It is obvious to anyone that if hospitals we paid for radiological diagnosis and treatment und the Insurance Acts the whole position of radiolo would be revolutionised. I am strongly of opini that this is a matter on which the British Institu of Radiology might well ask for an investigation.

(4) *State grants to hospitals for X ray equipment.*—T proposal to demand grants from the State will natural meet with opposition from those who pin their faith the voluntary system. But the high cost of radiolo and the increasingly important part it plays gives th branch of medicine a special claim for support fro a more reliable source. The State already suppor the treatment of many conditions and in particul those such as tuberculosis and venereal disease whi the public has proclaimed to be a national scourg But cancer is now recognised as a national scourg and those who try to educate the general public the dangers of this disease are quite rightly nev tired of emphasising the importance of early diagnos They might well add that in many forms of canc radiology provides the surest means of early diagnos while in nearly all forms it is one of the principal mea of treatment. It is therefore to the public intere to see that the work is carried out efficiently. T Government responded to the appeal for radiu though it is only fair to say that in this case it was matter of limited commodity, and it is an arresti thought that had it not been for the King's illn and recovery the country might never have acquir a quantity of radium sufficient for its needs. further claim for State support is the logical outco of the Local Government Act of 1929, for since und this Act the voluntary hospitals will be requir among other things to provide radiological facilit for the county council hospitals, the State should required to provide some share of the equipment addition to reimbursing the hospitals for runni expenses. So far as I am aware—and I speak op to correction—the special claims of radiology State support have never been presented. It appea to me that the British Institute of Radiology is t body which is most competent to bring influence bear upon the proper quarter. It should insist that t proper prosecution of the important branch which represents is not handicapped through lack of fun

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THE SIGNIFICANCE OF THE AFFERENT IMPULSES FROM THE SKI IN THE MECHANISM OF ABDOMINAL PAIN

By JOHN MORLEY, Ch.M. Manch., F.R.C.S. En
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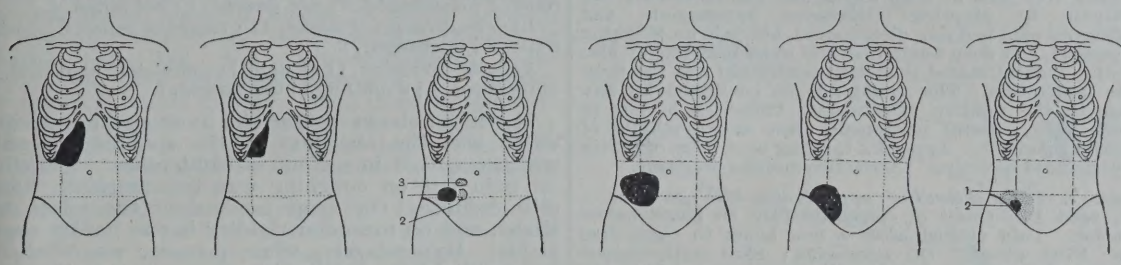
Hon. Consulting Surgeon, Ancoats Hospital;
Lecturer in Applied Anatomy,
Manchester University.

A recent paper by Weiss and Davis[1] recorded so important observations on a series of patients w localised thoracic or abdominal pain. These auth found that infiltration of the skin over the painful a with novocain caused abolition or diminution of t pain, and they make the remarkable claim that th findings afford experimental proof of the truth Mackenzie's viscero-sensory reflex theory of refer pain. Their observations and the theoretical ded tions that they based upon them seemed to me to of such importance as to demand a critical inves gation. The paper that follows describes a series cases investigated in a similar manner to those Weiss and Davis, and attempts, in the light of t results obtained, to assess the validity of th conclusions.

In this investigation, as in that of Weiss and Davis, ıe localised area in which the pain was felt was filtrated with novocain as closely to the skin as ossible, the deeper layers of subcutaneous tissue not eing injected. But whereas they used a solution of per cent. novocain I have thought it safer, in view the wide area of skin infiltrated in some cases, to nploy 1 per cent. novocain, to which a little adrenalin as been added. The object kept in view was to

Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5. Fig. 6.



(Case 1.) (Case 2.) (Case 3.) (Case 4.) (Case 5.) (Case 6.)

Figs. 1, 2, 3, 4, and 6 the black represents an area of pain, deep tenderness, and rigidity; in Fig. 5 it represents an area of localised tenderness. Fig. 3 shows (1) the original area of pain, deep tenderness, and rigidity; (2) the area to which pain migrated after area (1) was infiltrated; and (3) the area to which it further migrated after infiltration of area (2). Fig. 6 shows (1) an area of cutaneous hyperalgesia; and (2) an area of pain, deep tenderness, and rigidity.

scertain the effect of the infiltration in each case pon (1) the spontaneous pain, (2) the pain felt on oughing, (3) the objective cutaneous hypera'gesia s tested by light pinching of the skin, and (4) the eep tenderness and associated muscular rigidity. In his way I have attempted to obtain more precise bjective findings than Weiss and Davis, who only ention such factors as deep tenderness and muscular gidity in a few of their cases.

Only such patients as had distinctly localised pain nd whose mental condition allowed their willing peration were investigated.

Observations.

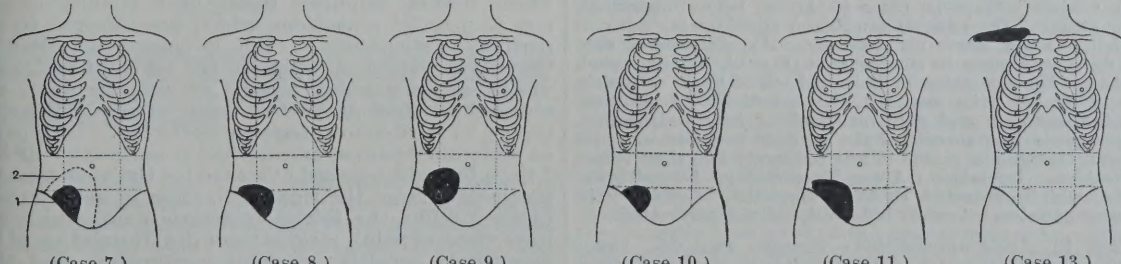
Case 1. *Acute obstructive cholecystitis*—Female, aged 64. ıdden onset of acute epigastric pain 24 hours before dmission. The pain had settled down to the right hypo-ondrium, going through to the back. No shoulder-tip ain. History of two similar attacks recently. On admis-on: Temperature 101° F.; pulse-rate 100. Spontaneous

Case 2. *Acute obstructive cholecystitis.*—Male, aged 37. Onset of acute pain in right hypochondrium 12 hours before admission. On admission: Spontaneous localised pain, deep tenderness, and muscular rigidity in shaded area (Fig. 2). No cutaneous hyperalgesia. The area of pain was infiltrated with 1 per cent. novocain till anæsthetic to pinprick. States that pain has now disappeared. On palpation muscular rigidity seems perceptibly less. Patient states that deep tenderness is still present, but "nothing like so tender as it was." Operation: Acutely inflamed distended gall-bladder with solitary stone, the size of a walnut, impacted in its neck. Cholecystectomy.

Case 3. *Acute appendicitis.*—Female, aged 26. Onset of acute pain 26 hours before admission. Pain central at first, shifting to right iliac fossa. On admission: Spontaneous pain, worse on coughing, in right iliac fossa. No cutaneous hyperalgesia. Deep tenderness and moderate rigidity in same area as pain (Fig. 3). The area of skin over deep tenderness was infiltrated with novocain till anæsthetic to pinprick. Patient was then asked to cough, and said she now felt the pain, not in the anæsthetised area, but nearer the midline. This more medial area was then infiltrated, and on coughing again some pain was felt a little higher up. Deep tenderness was now tested, and was "not so tender as before." Operation: Appendix covered with plastic lymph and curled up below cæcum. It was not perforated.

Case 4. *Acute perforated appendix with localised abscess.*—Female, aged 32. Acute onset four days before admission. On admission: Localised pain in right iliac fossa, much worse on coughing. Cutaneous hyperalgesia well marked in

Fig. 7. Fig. 8. Fig. 9. Fig. 10. Fig. 11. Fig. 12.



(Case 7.) (Case 8.) (Case 9.) (Case 10.) (Case 11.) (Case 13.)

ig. 7 shows (1) an area of pain, deep tenderness, and rigidity; and (2) an area of cutaneous erythema. Fig. 8 shows an area of pain, deep tenderness, and rigidity, while Figs. 9–11 also show areas of pain and deep tenderness. Fig. 12 illustrates Case 13, a case of duodenal ulcer, and indicates the position of the pain in the right shoulder-tip.

ain in right hypochondrium and angle of right scapula. he pain in front was worse on coughing. Cutaneous yperalgesia in shaded area (Fig. 1.) Deep tenderness and gidity in shaded area. Enlarged gall-bladder vaguely alpable. The shaded area was infiltrated subcutaneously ith 1 per cent. novocain until completely anæsthetic to inprick. The spontaneous pain had now disappeared. On oughing the patient felt some pain, but less than before filtration. Cutaneous hyperalgesia absent. On deep ressure she "couldn't feel much difference" from the tender-ess before infiltration, nor could any diminution of rigidity e detected. Operation: Spinal anæsthetic with ovaine-glucose. Gall-bladder very distended, with atches of green gangrene on fundus, and a small stone mpacted in cystic duct. Cholecystectomy.

shaded area (Fig. 4). Deep tenderness in same area, and some muscular rigidity. The skin was infiltrated with novocain, till anæsthetic to pinprick. Spontaneous pain had now disappeared. Pain on coughing still present, but definitely less. Deep tenderness still present, and patient could not appreciate any diminution in intensity. Operation: Spinal anæsthesia. Appendix in retrocæcal fossa, gangrenous and perforated, with abscess tracking into right lateral paracolic groove.

Case 5. *Acute appendicitis with localised abscess.*—Male, aged 23. Onset six days before admission. On admission: Localised tender mass in right iliac fossa (Fig. 5). No spontaneous pain, or pain on coughing. No cutaneous hyperalgesia. The skin was infiltrated with novocain over

tender area till anæsthetic to pinprick. On deep pressure patient at first stated that tenderness over mass was diminished, but when pressure was increased he doubted whether there was any real difference as compared with initial tenderness. Operation: Gangrenous appendix with localised abscess wrapped round by infiltrated omentum.

CASE 6. *Acute appendicitis with localised abscess.*—Female, aged 19. Onset of acute epigastric pain 21 hours before admission. On admission: Sharp spontaneous pain in right iliac fossa, worse on coughing. Area of deep tenderness and rigidity, with smaller area of cutaneous hyperalgesia (Fig. 6). The skin over area of deep tenderness was infiltrated till anæsthetic to pinprick. Cutaneous hyperalgesia and spontaneous pain had now disappeared, but pain on coughing still present, and deep tenderness and muscular rigidity also present. Patient stated that deep tenderness was less than before infiltration. This could not be confirmed by any change in the rigidity. Operation: Collection of pus in contact with parietal peritoneum just above middle of Poupart's ligament. Appendix hanging over brim of pelvis and perforated near tip. Uterus two months pregnant.

CASE 7. *Acute obstructive appendicitis with gangrene.*—Male, aged 18. Onset of epigastric pain 36 hours before operation. Pain shifted after a few hours to right iliac fossa. First attack. On admission: Skin erythematous from use of hot-water bottle. No spontaneous pain, but sharp pain in shaded area on coughing (Fig. 7). Cutaneous hyperalgesia present, but discounted on account of erythema. Marked deep tenderness and rigidity in shaded area. The shaded area was infiltrated with 40 c.cm. 1 per cent. novocain and adrenalin till anæsthetic to pinprick. Patient was then asked to cough, and said that he still felt pain "just the same as before." On deep pressure tenderness was still felt, but he said "I don't think it is quite so bad as before." Rigidity was unchanged. Operation: Appendix hanging over brim of pelvis. Hard concretion obstructing it one inch from tip, and part distal to this gangrenous but not yet perforated. There was a small amount of fluid round the appendix.

CASE 8. *Acute appendicitis.*—Male, aged 34. Onset of acute pain in epigastrium 20 hours before operation. After a few hours this pain disappeared, and sharp localised pain in right iliac fossa began. Two previous milder attacks. On admission: Slight spontaneous pain in right iliac fossa while lying still; much more marked on coughing. The initial epigastric pain had quite disappeared. No cutaneous hyperalgesia. Very marked rigidity and deep tenderness in shaded area (Fig. 8). The shaded area was infiltrated subcutaneously with 1 per cent. novocain until anæsthetic to pinprick. The slight spontaneous pain could not now be felt, and on coughing the sharp pain noted before the infiltration was not felt at all. On palpation there was no perceptible diminution in the muscular rigidity, nor in the associated deep tenderness. Operation: Acutely inflamed appendix with tip on outer side of cæcum. Not perforated.

CASE 9. *Acute appendicitis.*—Female, aged 12. Onset with central epigastric pain 45 hours before operation. First attack. On admission: Slight spontaneous pain in right iliac fossa, worse on coughing. Hyperalgesia of skin and deep tenderness in shaded area (Fig. 9), but not much rigidity. No tenderness or pain in back of loin. The skin was infiltrated with novocain till anæsthetic to pinprick. Spontaneous pain and pain on coughing now disappeared. Hyperalgesia was absent. Pain on deep pressure was still present, though she stated it was distinctly less than before infiltration. Operation: Appendix curled up behind lower ileum, which protected it from immediate contact with anterior parietes. Acutely inflamed, but not perforated.

CASE 10. *Acute appendicitis.*—Female, aged 35. Onset 24 hours before operation, with central pain, shifting to right iliac fossa. On admission: Spontaneous pain, not very severe, in shaded area (Fig. 10). Marked pain on coughing felt in same area. No cutaneous hyperalgesia. Deep tenderness limited to shaded area. Little muscular rigidity. The shaded area was infiltrated with novocain till anæsthetic to pinprick. Spontaneous pain was now "much less." Pain on coughing also "much less." Pain on deep pressure still marked, but "rather less tender." Operation: Kinked and swollen appendix, distended with pus, in retrocæcal fossa. No perforation.

CASE 11. *Acute salpingitis.*—Female, aged 24. Onset of pain in right iliac fossa two days before admission. No initial central pain. No urinary symptoms. On admission: Cutaneous hyperalgesia marked in shaded area (Fig. 11). No spontaneous pain, but pain on coughing. Deep tenderness over same area as hyperalgesia. Little muscular rigidity. Temp. 100° F. Pulse 108. The area was infiltrated with novocain subcutaneously till anæsthetic. Pain on coughing abolished completely. Deep tenderness much less marked. Operation: Turbid fluid in right iliac fossa and pouch of Douglas with fibrin on coils of ileum in pelvis. Left tube was congested, and muco-pus was found escaping from fimbriated end.

Discussion.

Summarising the findings from these 11 cases we note the following results of the subcutaneous infiltration with novocain:—

Spontaneous pain.—Present in 8 cases; complete relief, 6; partial relief, 2; unchanged, 0; not present, 3.

Pain on coughing.—Present, 9; complete relief, 3; partial relief, 4; unchanged, 2; not present, 1; not noted, 1.

Deep tenderness.—Present, 11; complete relief, 0; partial relief, 8; unchanged, 3.

Rigidity.—Present, 11 (4 slight); completely abolished, 0; diminished, 1; doubtful, 3; unchanged, 7.

It will be observed that the most striking positive effect was the abolition of the spontaneous pain which occurred in six out of eight cases. The effect on pain felt on coughing was less marked, though still definite. On deep tenderness the effect was slight, and on muscular rigidity it was hardly appreciable. Hyperalgesia, when present, was abolished inevitably by the infiltration.

These results afford, on the whole, a striking confirmation of the experimental findings of Weiss and Davis, though the type of case selected in the two investigations was somewhat different. Thus Weiss and Davis include in their 25 cases 3 of angina pectoris, 7 of pulmonary disease with pleurisy, 1 of carcinoma of the œsophagus, 1 of gastric ulcer, 4 of cholecystitis, 2 of appendicitis, 5 of renal conditions and 2 of salpingitis, while I have confined my attention to acute abdominal lesions that could be verified immediately by operation. But while my results go to confirm their very important observations, it is necessary to make some critical remarks about their theoretical deductions. They claim that the abolition of pain by cutaneous anæsthesia proves the truth of the theory of referred pain in visceral disease, which we owe to the late Sir James Mackenzie. "According to this view painful sensations arise as a result of irritation to a viscus. Such irritation produces a play of nervous impulses, which pass from the irritated viscera *along the splanchnic nerves*" (the italics are mine), "to certain segments in the cord. The perpetual bombardment of this cord segment with visceral impulses gives rise to an 'irritable focus' in the cord. The normal afferent impulses arising from the skin, muscles, and peripheral structures which traverse this segment now enter a cord region which is abnormally irritable. These normal impulses under such conditions give rise to painful sensations which are referred to the peripheral structures." But it cannot be admitted that these experiments prove the truth of the above viscero-sensory reflex theory of referred pain, any more than they prove the truth of my alternative theory of peritoneo-cutaneous radiation. In a paper on abdominal pain as exemplified in acute appendicitis I have brought forward evidence for the view that the localised pain in the right iliac fossa in acute appendicitis (unlike the initial epigastric pain, which is pure visceral pain), results from the stimulation of the exquisitely sensitive parietal peritoneum, and that the afferent splanchnic nerves from the appendix are not in any way concerned in its production. A reference to Figs. 13 and 14, in which these two conflicting theories of referred pain are represented diagrammatically, will show at a glance that the experiments under discussion have a precisely equal validity in the case of each theory. They no more prove one theory than they prove the other. But they may logically be held to prove that *either* the one theory *or* the other is the true explanation of referred pain.

Weiss and Davis do not appear to have taken into consideration the theory of peritoneo-cutaneous radiation at all when discussing the results of their investigations. They do make the comment, when discussing their cases of pleurisy: "It is to be remembered, also, that pain of pleural origin may be partly due to the direct sensitivity of the parietal pleura. I

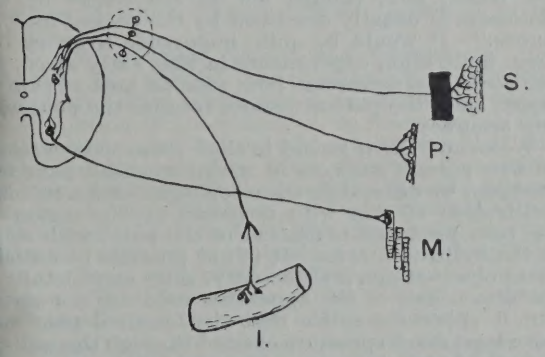
recognised that the parietal pleura receives direct ve-supply from the intercostal nerves." But the nception of a pleuro-cutaneous radiation of pain eives no attention at all. Yet I believe that their periments afford as much proof of pleuro-cutaneous diation of pain in pleurisy as of a viscero-sensory lex from the afferent splanchnic nerves of the lung.

Two Conflicting Theories.

We have now arrived at a point in the argument ere the experiments of Weiss and Davis, and those corded above, leave us unable to decide between e relative claims of the two conflicting theories of ferred pain—viz., the viscero-cutaneous reflex eory and the peritoneo-cutaneous (or pleuro-taneous) radiation theory. What these experiments ove, no more and no less, is that one or other theory true. (It is so obviously improbable that *both* eories are true, that I do not consider that possibility the present discussion.)

In attempting to find a method by which the merits my theory of peritoneo-cutaneous radiation could put to a more convincing experimental test, I turally thought of the peculiarly striking form of ferred pain in the shoulder-tip area associated with inful stimulation of the sensory fibres of the renic nerves in the peritoneum (or pleura) lining the aphragm. I have already [3] drawn attention to the variability with which the pain in the shoulder-tip ea is felt when the under surface of the diaphragm stimulated by an irritating fluid, as in perforation an ulcer, or when, under spinal anæsthesia, a swab brought into contact with the under surface of the aphragm. It was, in fact, mainly from a study of

FIG. 13.



agram to illustrate Mackenzie's theory of viscero-sensory and viscero-motor reflex, and the effect, according to this theory, of cutaneous anæsthesia. In this figure and Fig. 14 S = skin; P = parietal peritoneum; M = muscles of abdominal wall; and I = intestine or appendix.

is shoulder-tip pain that I elaborated my theory of ritoneo-cutaneous radiation. Pain localised to the pra-acromial region, resulting from irritation below e diaphragm, would provide exactly the test that e require, since all question of the agency of splanch-c nerves can there be set aside. It is universally mitted that the painful stimulus passes up the sensory res of the phrenic nerve derived from the third, urth, and fifth cervical segments, and that the pain felt, not in the region of the diaphragm, but in those eas of skin over the shoulder supplied by the scending cervical nerves, which originate from the me cervical segments of the cord. The "irritable cus" theory is one possible explanation of this diation of pain. According to this theory the rmally silent afferent impulses from the cutaneous rves over the shoulder become painful, though hether the "bombardment" from the parietal ritoneum affects the posterior horn cells or the lls of the posterior root ganglia it is not possible at resent to be certain. If it could be shown, then, that filtration of the shoulder-tip area of skin with ovocain abolished shoulder-tip pain, very strong evidence in favour of the theory of peritoneo-cutaneous radiation would be forthcoming.

The following cases were investigated in order to obtain light on this question.

CASE 12. *Perforated duodenal ulcer.*—Male, aged 36. Perforated five hours before operation. On admission: Diffuse abdominal pain and rigidity with pain in the posterior part of the right shoulder-tip area, mainly over the suprascapular fossa. The shoulder-tip area was infiltrated

FIG. 14.

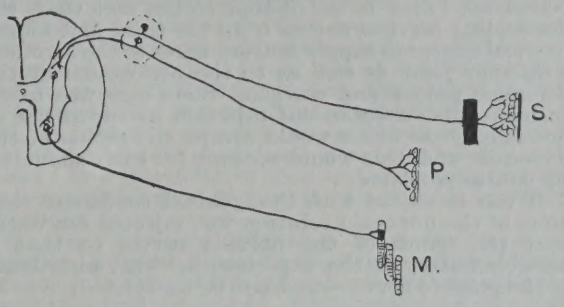


Diagram to illustrate theory of peritoneo-cutaneous radiation and peritoneo-muscular reflex, and the effect, according to this theory, of cutaneous anæsthesia.

with 1 per cent. novocain until anæsthetic to pinprick. Pain in the shoulder-tip area could no longer be felt. Operation: Spinal anæsthesia with stovaine-glucose. Perfect anæsthesia of abdominal wall extending to about the fifth dorsal segment. Right paramedian incision. While the abdomen was being opened, the patient volunteered information that he now felt pain in the tip of the left shoulder, but not in the right as before infiltration. A perforated ulcer was found in the first part of the duodenum, anterior wall, with a fair amount of extravasated fluid. The perforation was sutured. A moist swab was then passed up between the liver and the right dome of the diaphragm. At first no pain was felt. He then complained of some pain in the right shoulder-tip area. A similar swab passed up under the left dome of the diaphragm produced much more severe pain in the left shoulder immediately. This was repeated twice, and each time the difference between the two sides was most striking, judging both by the patient's statements and by the expression of his face. The left, unanæsthetised, shoulder was the seat of much more acute pain.

CASE 13. *Perforated duodenal ulcer.*—Male, aged 55. Sudden onset of severe pain 5½ hours before operation, when lifting some timber. Patient had had a perforated duodenal ulcer sutured 11 months before. On admission: Great pain in abdomen and in right shoulder-tip (Fig. 12). Diffuse board-like rigidity of abdominal muscles. Although the spontaneous right shoulder-tip pain was quite unusually severe there was no hyperalgesia of the skin in that area on pinching it lightly. The right shoulder-tip area was now infiltrated with 1 per cent. novocain till anæsthetic to pinprick. Patient now stated that pain in the right shoulder was "easier." Operation: Spinal stovaine-glucose. Good anæsthesia of abdominal wall. On opening the abdomen through a right paramedian incision a perforation was found in the first part of the duodenum, with a large collection of fluid in the right subhepatic and right anterior subphrenic spaces, partly shut off from the general peritoneal cavity by adhesions from the earlier perforation. The perforation was sutured. On swabbing between the right lobe of the liver and the right dome of the diaphragm patient felt some pain in the right shoulder-tip. On swabbing in a similar manner under the left diaphragm, where no irritating fluid was found, a much more agonising pain in the left shoulder-tip area was complained of. Posterior gastro-enterostomy was performed.

It was thus found that infiltration of the shoulder-tip area abolished the spontaneous shoulder-tip pain in Case 12, and gave partial, but very marked relief, in Case 13. The unusual severity of the shoulder-tip pain in Case 13, due to the adhesions which caused a localisation of most of the extravasated fluid to the space under the right dome of the diaphragm, must be borne in mind. But the most striking phenomenon in each case was the marked difference between the intensity of the pain in the two shoulders, when a painful stimulus in the shape of a swab was applied to both domes of the diaphragm in the process of cleansing the peritoneum. The difference was so

marked as to impress all the onlookers, while the patients commented on it days afterwards. It should be remembered that in each case the extravasation had been chiefly localised to the right subphrenic space, so that the sensory nerves on that side would presumably be in a more irritable condition. In spite of this, anæsthesia of the skin over the right shoulder-tip area produced great diminution of the referred pain as compared with the side that was not anæsthetised.

The fact that shoulder-tip pain was not abolished completely may be attributed to the fact that the descending cervical nerves from the third and fourth cervical segments supply sensory fibres to the acromio-clavicular joint as well as to the periosteum of the acromion process and clavicle. Since care was taken to make the subcutaneous injection as superficial as possible, these fibres would escape the action of the novocain, and this would account for such shoulder-tip pain as persisted.

It can be stated with the greatest confidence that none of the novocain solution was injected anywhere near the trunk of the phrenic nerve, so that a possible fallacy in the experiments—viz., anæsthesia of the phrenic nerve—need not be considered.

Peritoneo-cutaneous Radiation.

We find, then, in the above two crucial experiments that anæsthesia of the skin in the shoulder-tip area produces no less profound a modification of pain than we have found on similar infiltration over an inflamed appendix or gall-bladder. There is every reason to suppose that the mechanism of the anæsthesia, as of the production of pain, is exactly similar in the two cases. The sensitive parietal peritoneum lining the diaphragm has the same protective function as the peritoneum lining the anterior abdominal wall, with which it is continuous. Its sensory innervation is, in all respects, similar, save that an embryological accident has widely separated the subphrenic peritoneum from its corresponding skin area. It is this accident, if so it may be termed, which provides us with the opportunity of studying the protective mechanism. For, in the study of shoulder-tip pain, the problem is simplified in that no question of radiation or reflex through the afferent splanchnic nerves can be entertained. The pain is produced by a process of peritoneo-cutaneous radiation. Anæsthesia of the skin over the shoulder, by cutting off the normal afferent stimuli, profoundly modifies the sensation of pain, though the direct afferent path through the phrenic nerve to the brain remains open.

There is every reason to believe that the experiments of Weiss and Davis will find their true explanation along similar lines.

Evidence that I have already brought forward (loc. cit.) shows that the pain over an inflamed appendix is so accurately localised that it must be dependent on stimulation of the afferent nerves in the parietal peritoneum, and not of the afferent splanchnic nerves. Precisely the same reasoning holds good as regards the localised muscular rigidity and associated deep tenderness over an acutely inflamed appendix. They correspond accurately with the position in which the appendix happens to be lying, and in an early case, before perforation has widened the area of irritation, they may be used to predict the precise position in which the appendix will be found at operation to lie. A relatively slight degree of muscular rigidity and deep tenderness in a case of early acute appendicitis means that the appendix is shielded from the anterior parietal peritoneum either by occupying the retrocæcal fossa or by a covering provided by a thick omentum or the lower coils of the ileum. These precise indications of the site of an inflamed appendix are quite inconsistent with the theory of a viscero-sensory or viscero-motor reflex through the agency of the afferent splanchnic nerves from the appendix. But they are consistent with, and afford the strongest evidence for, the theory of peritoneo-cutaneous radiation and peritoneo-muscular reflex.

The condition of acute obstructive cholecystiti due to impaction of a stone in the cystic duct or nec of the gall-bladder, which provided Cases 1 and 2 i the above series, affords evidence leading to the sam conclusion. It is not uncommon in such a case for progressive enlargement of the inflamed gall-bladde to occur, due to distension with muco-pus. If suc a case is observed carefully at intervals of a few hour the area of maximum pain, corresponding with that c muscular rigidity and deep tenderness, will be foun to creep gradually lower as the gall-bladder become more distended, until it may be so low in the righ abdomen as to give rise to difficulty in differentiatin the case from one of acute appendicitis. The site c the maximum pain, tenderness, and rigidity must b determined by contact of the fundus of the inflame gall-bladder with the parietal peritoneum. Fo were the process a viscero-sensory and viscero-moto reflex, the maximum pain, tenderness, and rigidit would be constant in position, since they would b determined by the segmental splanchnic innervatio of the gall-bladder.

If due weight be given to these arguments it wi be found that these infiltration experiments, so fa from supporting Mackenzie's viscero-sensory refle theory, afford convincing support to the alternativ theory of peritoneo-cutaneous radiation.

The question of pure visceral pain does not arise i these infiltration experiments, since all the case dealt with showed accurately *localised* pain. Whil the existence of true visceral pain has been abundantl demonstrated by Hurst and others, it is a vaguel localised central pain, and is entirely unassociate with localised tenderness or rigidity. The pur visceral pain, which occurs in most cases of acut appendicitis for instance, is only present for the firs few hours, and, though felt in the centre of th abdomen, is usually described by the patient as "a across." It would be quite impossible to carry ou these infiltration experiments in that early stage, fo one could not determine how wide an area of skin t inject, since the patient cannot localise the pain wit any accuracy.

Weiss and Davis record in their paper observation on two normal subjects in whom localised pain wa produced by distending the œsophagus with a balloon Infiltration of skin with novocain in the region c the pain produced migration of the pain, with relie in the infiltrated area. It is not possible to criticis these observations satisfactorily, since such details a the dimensions of the apparatus used are not given But it appears possible that the localised pain ma have been due to pressure exerted through the walls c the œsophagus upon some branches of the intercosta nerves. Whatever the explanation may be, thei results from these two cases are of much less sig nificance than those already discussed, and cannot b held to invalidate the conclusions at which we hav arrived.

Summary.

(1) In patients with *distinctly localised* abdomina pain subcutaneous infiltration of the painful are with novocain causes complete or partial relief o pain. (2) The contention that these observation afford direct experimental support for the viscero sensory reflex theory of referred pain is criticised (3) In patients with shoulder-tip pain from irritatio of the peritoneum under the diaphragm, subcutaneou infiltration of the area in which the pain is felt cause complete or partial relief of pain. (4) These obser vations afford strong evidence in favour of th peritoneo-cutaneous radiation theory of referred pai as opposed to the viscero-sensory reflex theory.

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THE USES OF CHLORETONE.*

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I HAVE been fond of quoting a saying by a French ysician that "what impresses one's colleagues is a rect diagnosis, what impresses the relatives is a od prognosis, but what impresses the physician nself is when any definite effect results from his atment."

I want to say something about a comparatively w drug, which I believe to be the most potent nedy for several disorders hitherto treated by lliatives with but slight success. It may seem prising to allude to a drug as new, which I have ployed for perhaps a quarter of a century, but it not yet old enough to be admitted to the Pharmaœia and consequently is unknown to many. The ug is chloretone—chemically trichlor tertiary butyl ohol, and physically a white coarse powder with a her acrid taste, volatile and sparingly soluble in ter, like camphor. It first came under my notice as preservative in Parke Davis's solution of adrenalin. employed this in the treatment of some cases of stric ulcer, or rather erosion, to arrest hæmorrhage d was struck with the disappearance of the pain, nger, and restlessness which ensued. This could rdly be attributed to the adrenalin, and later when gave the chloretone alone I found that the effect was hanced. It acted as an anodyne as well as a prevative—not only locally but as a general sedative en the dose was increased. Following this observan I was led to employ chloretone in a number of fections in which these attributes promised to be eful.

Sea-Sickness, Chorea, and Tetanus.

Perhaps the first trouble in which the anæsthetic d sedative effect of chloretone was employed was in e prevention of sea-sickness. So many means had en recommended before without success that the neral public regarded with absolute incredulity y idea of a preventive or remedy in such circumances. I am, however, quite convinced that, ven a start of half an hour, five grains of chloretone ll enable a person to complete a voyage of anything to six hours without discomfort on the score of seakness. This same applies to travelling by train or r which affects some people in the same way.

I recall an instance of a French lady who taught French England and English in France and crossed the Channel rhaps four times a year. She was evidently a poor sailor, r she never escaped sea-sickness or expected to even on a lm day. I gave her some 5-grain powders of chloretone, d she made her first crossing in perfect comfort. Unfortutely, however, the spare doses had been wrapped in ordinary per, and on the return journey, owing to evaporation, all d disappeared, and mal-de-mer asserted itself as before. ie drug was later put up in gelatin capsules, and remaing available enabled her not only to accomplish the passage thout upset, but even to go by the long route.

In another instance the journey to South Africa was complished—a matter of 18 days—by a judicious repetition the dose.

I only mention these two early experiences for since ien proprietary articles under the name of Zotos id Mothersill in which chloretone is the effective nstituent have been advertised and widely used. The sedative effect on the brain, indicated in these stances, suggested to me the probable value of the ug in chorea, which is dependent on disturbance iginating in the cerebral cortex. In our archives included a collection of 100 such cases treated only ith chloretone. They were of varying intensity, age, id duration, just as admitted, and I will only quote ou the final analysis which showed that the choreic ovements were suppressed in an average of five ays and the stay in hospital reduced to three weeks. This not only represents a marked reduction in the duration of the illness, but in addition an immense saving in nursing and the suffering of the patient by injury and loss of sleep and food through the violent and ceaseless movements. In these cases the chloretone was given in five or ten-grain doses dissolved in paraffin or cod-liver oil emulsion, and this larger dose continued over several days disclosed further effects of the drug, two of which I will mention as leading to wider uses. Full doses led to a condition of stupor resembling that present in encephalitis lethargica, in which the patient apparently slept day and night and required to be roused to take food—not, you may think, a desirable consummation, but a very blessed contrast in severe cases to the violent contortions and need for constant restraint to keep the patient in bed or from physical injury. The administration of the drug in moderate or small doses caused insensitiveness of the bladder amounting in some to retention of urine. Now this sedative effect on the central nervous system and bladder find useful application in other directions.

On one occasion, returning from the summer vacation, I found a boy in the ward suffering from tetanus. In spite of treatment he was having seizures every hour and the outlook was as hopeless as is usual in these cases. Recalling the effect of chloretone on some of the severer cases of chorea, I administered at once in an enema 20 grains dissolved with the aid of glycerin. He had one seizure only soon after, and then made a complete recovery. As you know, tetanus is fortunately not common, and I never had another opportunity of testing the remedy; but I am glad to put this on record as I have seen accounts since of fatal cases not treated in this way. If it only controls the symptoms it may give time for other remedies to act, which at present they have little chance to do.

Vesical Irritability: Whooping-cough.

With regard to the effect on the bladder, we have been used to the employment of buchu and hyoscyamus with inconspicuous results, though frequency of micturition is a very distressing condition. Even in average health an irritable bladder causes much inconvenience, and often entirely debars people so afflicted from social engagements. I once enabled the chairman of a medical meeting to get through a long morning while suffering from diarrhœa by giving him a teaspoonful of raw arrowroot, and I am sure that the practitioner who enables a patient to weather a lunch or tea party without inconvenience by the use of a five-grain capsule of chloretone will earn eternal gratitude.

I now come to small doses, the basis being a saturated solution in water (grs. 2½ to the ounce) comparable to camphor water. This solution with two drachms of 1–1000 adrenalin solution to the ounce proved of the greatest service in hundreds of cases of conjunctivitis resulting from irritant gas during the late war, subduing the irritation and reducing the hyperæmia. At the same time the escape by way of the lacrymal duct led to some loss of sensation in the nose and pharynx. Later this side issue suggested the use of chloretone in hay fever. Inhaled as a spray from an atomiser the solution immediately allays the symptoms, the effect lasting many hours, so that occasional repetition will carry the patient through the usually distressing period of early summer. As an antispasmodic in acute gastric flatulence, dysmenorrhœa, persistent hiccough, or the severe pain of shingles its effect is immediate and sure.

All this will hardly be believed, but it may be observed that none of the maladies referred to has responded to specific or known remedies; so one has quite a free hand to try something fresh. Having now perhaps strained credulity to the utmost, I will conclude by making the most outrageous statement of all—namely, that this dilute solution of chloretone in doses of one grain will cure whooping-cough in a week. I was recently consulted about a little girl of 3 causing great anxiety to her parents owing to

*Abridged from an emeritus lecture delivered at the iddlesex Hospital on Nov. 29th.

vomiting, sleeplessness, and rapid wasting resulting from the frequent violent paroxysms. One-grain doses of chloretone were given four times a day with immediate relief. After two days it was given only morning and night, and after the fifth day discontinued altogether as there was no further need, and there was no recurrence.

ACUTE DISSEMINATED ENCEPHALOMYELITIS FOLLOWING VACCINATION.

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An unusual opportunity for continuous observation during life with a complete autopsy 17 hours after death makes this fatal case of so-called post-vaccinal encephalitis worthy of record.

The patient, a female aged 5, unvaccinated, who lived in Limehouse, was admitted to Mile End Hospital on June 1st, 1929, with pneumonia of four days' standing. She had had measles and chicken-pox in infancy, and in 1927 had an attack of pneumonia which left her with a "weak chest," for which she had since attended Victoria Park Hospital.

Her temperature was 103·6° F. The lungs showed a catarrhal pneumonia chiefly affecting the right middle lobe, but the heart and abdomen showed no abnormality. Two days later both upper lobes were involved, the child was very delirious, and meningism was noted. The fever settled by lysis by June 11th and convalescence was uneventful, the physical signs in the chest clearing rapidly. She was about to be discharged from hospital when, on June 23rd, another child, admitted to the ward on the previous day, developed the rash of small-pox. As a result, the infected ward was put in quarantine, and on June 26th 15 contacts, nurses and children, were vaccinated. The same batch of Government lymph was employed for all these vaccinations, two insertions being made in the left arm and half a tube of lymph (undiluted) being used in each case.

The patient had a temperature of 100° on the fifth day after vaccination and an evening temperature above 99° on the seventh and ninth days; thereafter the temperature was normal until the evening of the thirteenth day (July 9th). During this period the child appeared well and lively.

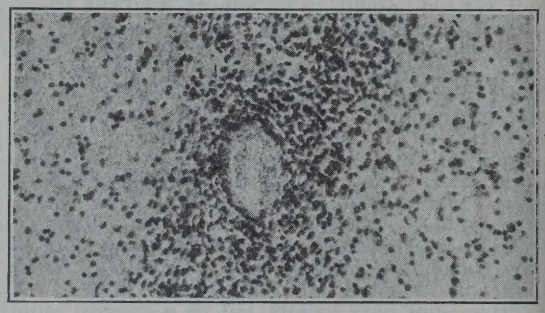
About bedtime on the evening of the thirteenth day the child was noticed to be rather excited, running about and striking other children. Her temperature was 100°, but she was not complaining. She was put to bed and given an aperient. The following morning she complained of headache and pain in the limbs. Her temperature was then 101·6°, pulse-rate 110, and respiration-rate 24. She passed urine naturally about this time. At noon the child told the nurse that she had wetted the bed; this was the only occasion on which she was incontinent. Fifteen minutes later she had become drowsy, though easily roused; her face was flushed and examination of the throat was negative. At 4.30 P.M. she accepted a drink; this was the last time she spoke or took food. It was now noticed that a stream of saliva was running from her mouth.

When examined at 5.45 P.M. she was lying on her back with the head turned to the right and saliva running freely. The face was grey, with slight cyanosis, and the cheeks were puffy, although the parotids were not palpably enlarged; she was very drowsy and difficult to rouse. There was ptosis of the right upper eyelid; the pupils were round, central and equal, and contracted briskly to light. Reaction to accommodation could not be tested. There was no squint or nystagmus. The fundi showed dilated veins in the neighbourhood of the discs but were otherwise normal. The neck muscles were stiff but there was no head retraction. The cheeks gave slight muscular response to pin-prick, more marked on the left side; there was occasional slight twitching of the left angle of the mouth, doubtful weakness of the right side of the face, and definite weakness of the right arm and leg. The abdominal reflexes were sluggish, especially the lower ones. The knee-jerks and ankle-jerks were brisk and there was bilateral ankle-clonus, not well sustained. The plantar response was extensor with all the toes on both sides, and Kernig's sign was present on the left side. Tache cérébrale was present. There were two vaccination crusts, half an inch in diameter, in the left deltoid region, with a slight surrounding fading redne No glands were palpable in the left axilla, nor was the general enlargement of lymph glands. The heart, lungs, a abdomen showed no abnormality.

Eight ounces of urine were removed by catheter; contained a trace of albumin but there was no organis deposit. A culture grew *B. coli communis*. Lumbar punctu was performed under light anæsthesia and 40 c.cm. of cle colourless fluid dripped away. This contained 0·8 sm lymphocytes per c.mm.; it gave normal reduction and the was no increase of protein.

The drowsiness became steadily deeper during the evenir passing into coma. When seen the following morni (July 11th, fifteenth day) the child was deeply comatose a there was still ptosis. The pupils reacted briskly to ligh ptyalism had ceased, and the tongue pointed to the righ There was now no difference in the muscular power of t two sides of the body, but the tone of the limb muscles w diminished. The knee-jerk was absent on the right side a

FIG. 1.



Low power view of a vessel of the subcortical white matte showing dense extra-adventitial infiltration.

just present on the left. There was no ankle-clonus; th right plantar response was definitely flexor and the left ga a doubtful Babinski. The temperature was 101·4°, th pulse-rate 140, and the respiration-rate 68. The child w again catheterised, though the bladder was not distended.

At 5 P.M. her colour was much worse. Cheyne-Stoke respiration was established and muco-pus, which collected the back of the throat, was brought up from time to tim She was sweating profusely. Otherwise the physical sig had not altered.

At 6 P.M. the temperature was 102·4°, the pulse-rate 16 and the respiration-rate 62. The pupils were still sma round and equal, but they now responded very sluggishly light. Lumbar puncture was again performed and 45 c.cm. clear, colourless fluid dripped away. However, there was improvement and she died at 7 P.M. Her bowels had acte on July 9th; from then on she was constipated.

It is noteworthy that the only other person who showe unusual signs was a girl aged 5, previously unvaccinate who had been vaccinated with the other half of the sam tube. This child was convalescent from furunculosis of th right external auditory meatus. She had previously suffere from chicken-pox and measles. On the fifth day aft vaccination her evening temperature rose to 100°, and the was an evening rise above normal on the seventh, eighth ninth, tenth, thirteenth, and fourteenth days. During th period the child appeared to be quite well. On the mornin of the fifteenth day she vomited and her temperature ros to 102°; she was definitely drowsy. She was cold-sponge and when seen at noon her temperature was 103°, althoug she was no longer drowsy and no abnormal physical sig could be made out. The fever subsided next day and nothin further ensued. When seen again in October, 1929, she w quite well.

Autopsy.

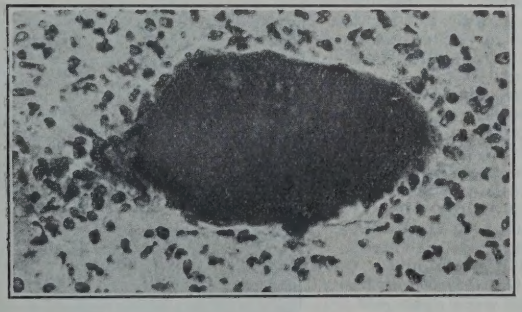
The only macroscopic abnormality of the nervous syste was intense congestion of the small vessels of both grey an white matter. The bulk of the brain was fixed in 10 pe cent. formol-saline; after embedding in celloidin, section were stained with hæmatoxylin and van Gieson and b Nissl's method, while frozen sections were stained for fa and by the Bielschowsky method for neurofibrils. Tissu fixed in formol bromide was utilised for Penfield's modifica tion of Hortega's method for microglia. Zenker-fixe material was embedded in paraffin and stained by Giems and Panchrom. Finally, tissue was mordanted and staine by the Weigert-Pal procedure for myelin sheaths.

Character of Lesions.—In stained sections the lesion can quite easily be seen with the naked eye. I the white matter the changes occur in strict associa

tion with the blood-vessels, of which some are affected and some escape in any given area; in the grey matter this association may not at first sight appear obvious. The essential lesions are: (1) perivascular infiltration, and (2) extra-adventitial infiltration with demyelination of the area immediately surrounding the vessel. Perivascular infiltration, consisting of a collection of inflammatory cells in the Virchow-Robin spaces, varies in degree in different vessels. In some only a few scattered cells are present; in others a cuff, several cells deep, extends round the whole circumference of the artery or vein. The constituent cells are mainly large and small lymphocytes with a few plasma cells and, in some regions, occasional polymorphonuclear leucocytes. Extra-adventitial infiltration (i.e., a collection of cells in the nervous tissues immediately outside the vascular adventitia) is associated with and is presumably the reaction following destruction of the myelin sheaths over a wider or narrower zone around the vessel. Where closely adjacent vessels are affected their respective zones of infiltration and demyelination may coalesce. As is clearly seen in sections stained by Penfield's method, the majority of the cells of this infiltrate are microglial in nature; in sections stained by the Nissl method their cell-bodies, irregular in outline, appear reticulated or finely vacuolated. Appropriate methods show them to contain numerous fine fatty granules, but typical fully formed granular corpuscles are wanting. The nuclei of these cells are very polymorphic and assume a great variety of grotesque forms; some have to be distinguished from polymorphonuclear leucocytes, to which they bear a superficial resemblance. Glial cells, some with slightly enlarged bodies and others with large pale nuclei, are also present. Where the perivascular infiltrate is very dense there may be some overflow of lymphocytes into the immediately adjacent nervous tissue; in many areas a few polymorphonuclear leucocytes are mingled with the other infiltrating cells and may be found at some distance from the vessel wall. Occasional wander cells are present. Among all types of cells nuclear degeneration in the form of pyknosis and karyorrhexis is very common and nuclear debris is abundant in almost every region.

While in the white matter the limits of the extra-adventitial infiltrate are more or less sharply demarcated at a level where demyelination ceases, in the cortex and other areas of grey matter this infiltrate appears to be less dense but more extensive, and its peripheral limits are hard to define. Such areas cut tangentially appear to be unconnected with the vessels and suggest a localised overgrowth of microglia; many sections may have to be cut before the affected vessel comes into view. Weigert-Pal preparations show that, here as elsewhere, destruction of such myelinated fibres as may be present has occurred. In sections stained by the Weigert-Pal method the zones of perivascular demyelination are well demonstrated. In some cases the process is complete, but in others fragments of the sheaths originally present are still visible and stain more intensely than the normal myelin. At the periphery of the demyelinated area the persisting myelin sheaths are greatly distorted or ballooned and globules of free myelin are more numerous. The amount of free myelin, however, together with that of the fatty products of its degeneration seen in hæmatoxylin and Scharlach preparations, does not nearly correspond to the extent of the demyelination; there is also a striking absence of anisotropic substances in the fully demyelinated areas, and it seems that not only is the removal of waste fatty products accomplished with abnormal rapidity but that much of the myelin disappears without breaking down into the doubly refractile lipoid materials seen in the slower process of tract degeneration.

FIG. 2.



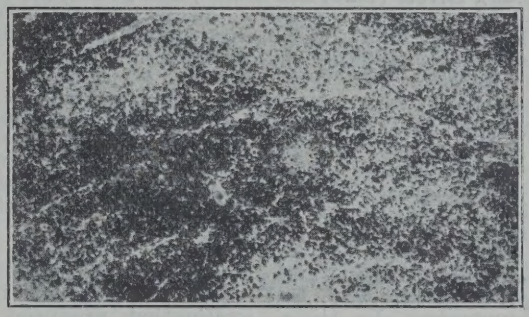
High power view of a less severely affected vessel to show the polymorphic appearance of the infiltrating microglial cells.

Even in the zones of complete demyelination a number of axis-cylinders persist, although the total is far below the number normally present. Of those which remain many are thickened and stain more intensely than normal, while fusiform swellings are present at intervals along the course of others. The nerve-cells are everywhere surprisingly well preserved; even when involved in a dense extra-adventitial infiltration their appearance is little altered. Thus in the medulla the lesions are almost unilateral and, while the cells of the twelfth nerve nucleus of one side are quite normal, on the other side they are involved in an extensive zone of infiltration and myelin destruction; even so, they show only minor changes in the form and colorability of their Nissl bodies.

Distribution of Lesions.

Cerebral Hemispheres.—Lesions are numerous throughout the white matter, in the cerebral cortex, and in the grey nuclei at the base; all of the many areas examined show some affected vessels. Both arteries and veins are involved, but in some regions particularly the latter. Perivascular infiltration may exist in the cortex in the absence of extra-adventitial changes, but elsewhere it is associated with the characteristic perivascular demyelination. Small hæmorrhages into the demyelinated areas are sometimes seen; no reaction is seen in the surrounding tissues, a fact which suggests that they occurred shortly before death or that they may possibly be attributed to rupture at autopsy of the greatly congested vessels. In a few places, particularly in the deeper parts of the sulci, the meninges contain small collections of inflammatory cells similar to those in the perivascular spaces.

FIG. 3.



Weigert-Pal preparation of spinal cord, showing zones of demyelination around the vessels radiating through the white matter.

Cerebellum.—Numerous vessels in the white matter show perivascular infiltration and zones of demyelination.

Brain-stem.—Severe in the midbrain and pons, the changes increase to a maximum in the upper part of the medulla, then decrease in intensity as the cord is approached. At all levels they are very much more marked on the right side; the central parts of the substantia reticularis and the grey matter in the floor of the ventricular system are severely involved. Perivascular infiltration is often intense and the extra-adventitial zones of adjacent vessels often coalesce. Arteries and veins alike are affected. The meninges are normal.

Spinal Cord.—A feature of the disease in the cord is the severe involvement of one segment and the entire freedom from lesions of a closely adjacent segment. Thus, while the first cervical segment is quite normal, the third cervical shows severe changes; the first lumbar segment is severely involved and the last lumbar segment and sacral region are free from disease. A second and unusual feature at almost all levels is the striking limitation of the lesions to the right half of the cord, the other being wholly or almost wholly spared; at the same time the grey matter in many segments is more severely affected than the white. In the middle and lower cervical, upper dorsal, and upper lumbar regions the unilateral distribution of the lesions is absolute. The vessels radiating through the white matter, particularly of the anterior and lateral columns, show considerable perivascular and extra-adventitial infiltration with a wide zone of perivascular demyelination. The large vessels of the grey matter are similarly affected and there is considerable diffuse infiltration of the anterior or posterior horns or both. There is a narrow zone of demyelination at the surface of the cord in the lateral column. The meninges are normal. In the lower dorsal region the lesions, though more marked on the right side, are not absolutely confined to it; on the left side the lesions affect only the white matter, while on the right

side both white and grey matter are involved. There is considerable perivascular infiltration of the vessels of the anterior fissure, with a narrow zone of demyelination along both lips of the fissure.

Intervertebral Ganglia and Peripheral Nerves.—No changes were detected in the lower cervical ganglia or brachial plexus of either side.

Other Organs.—The lungs, which macroscopically were greatly congested, show numerous small areas of early broncho-pneumonia. The axillary lymph glands on the left side show an inflammatory reaction of moderate degree. The heart, liver, spleen, pancreas, kidneys, submaxillary and parotid glands, stomach, and intestines appear normal. One calcified lymph gland was present in the mesentery. The vaccinated area appeared normal for the period following the inoculation; there was no sign of sepsis and the blood was sterile on culture.

The clinical picture presented by this fatal case of encephalomyelitis is in accordance with the descriptions of similar cases occurring after vaccination published by Turnbull and McIntosh (1926), Bijl (1928), Rivers (1929) and others, and with those cases following acute infectious diseases—e.g., measles (Greenfield, 1929), or occurring spontaneously (Brain and Hunter, 1929). The overwhelming character of the infection was very striking. Rivers notes two instances in which, after vaccination, two children in the same family developed the symptoms of encephalomyelitis on the same day. It seems possible that the second of our cases may have had an abortive attack of encephalitis, although there is no apparent reason why this one tube of lymph should have contained anything not present in the rest of the batch.

Of the remaining 13 individuals vaccinated, two were children, aged 5 and 4 respectively and previously unvaccinated, who had recently recovered from pneumonia. In them, vaccination produced no unusual effects. In all the cases a "brisk take" was noted on inspection on July 3rd. At no time did the vaccinated arm in the fatal case differ in appearance from the arms of the others vaccinated.

Histologically the lesions in the present case conform closely to the descriptions given by Turnbull and McIntosh (1926), Lucksch (1926), Bouman and Bok (1927), Perdrau (1928) and others, of the disseminated encephalomyelitis which has during recent years occurred from time to time as an early sequel to vaccination. An unusual feature of the present case, and one to which we have been unable to find reference in the literature, is the almost complete limitation of the cord lesions to one-half of the cord. In view of the alleged direct association between vaccinia and the nervous disease, it is perhaps a not unimportant fact that it was the right half of the cord which was affected—whereas vaccination had been performed on the left arm—and that no lesions were detected in the brachial plexus or intervertebral ganglia on the vaccinated side. In their essential characters the lesions do not differ from those in the similar cases following measles (see Greenfield, 1929) and certain other infective states, or arising during the course of antirabic treatment; one of the writers (E. W. H.) is at present investigating such a case, to be published shortly, occurring after small-pox. Any investigation into the ætiology of this "post-vaccinal encephalitis" must therefore take into account the occurrence of similar complications in the other acute infective fevers and aim at discovering a common factor responsible for the production of identical histological lesions in a number of very different conditions.

We are indebted to Dr. R. L. Guthrie, coroner for East London, for permission to publish this case.

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Clinical and Laboratory Notes.

DILATATION OF THE AURICLES RESULTING FROM HEART-BLOCK

AND PRODUCING PRESSURE SYMPTOMS.

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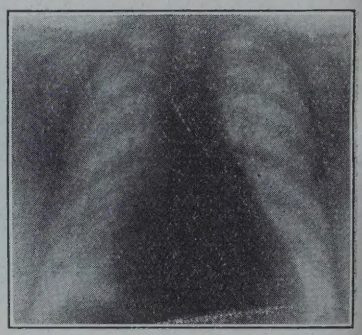
IN THE LANCET of Dec. 12th, p. 766, F. J. Bach and T. S. Keith describe a case of enlargement of the left auricle causing pressure on, and obstruction of, the left main bronchus and quote a series of cases described by various authors. Pressure on the œsophagus and paralysis of the left recurrent laryngeal nerve have also been described as rare complications of auricular dilatation. The case now described is of interest from two points of view; for in the first place it affords an example of dilatation of the auricle producing pressure symptoms of such a nature that a mediastinal tumour was suspected; and secondly, it illustrates a mechanism whereby auricular dilatation may be produced apart from valvular lesions and apart from auricular fibrillation, the two most commonly recognised causes. Inasmuch as the patient did not succumb, post-mortem confirmation of the findings and conclusions is lacking, but the clinical and instrumental findings appear sufficiently clear to warrant the conclusions drawn.

Report of the Case.

A. B., aged 48, was a healthy man until the onset of his present symptoms; he had never had acute rheumatism, chorea, or sore-throats, and had not previously suffered from cardiac symptoms. His family history was negative. About January, 1929, he began to have dyspnœa on exertion and cough, with occasionally slight œdema of the ankles at nights. In March he began to have difficulty in swallowing solid food, and stated that his voice had altered in character; he noted that the lower part of his neck was much swollen. He was sent into hospital with a tentative diagnosis of mediastinal tumour.

FIG. 1.



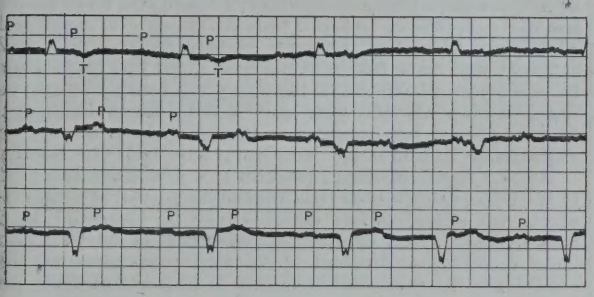
Radiogram showing enlarged pear-shaped cardiac shadow suggestive of auricular dilatation.

On admission his lips were cyanosed; there was no œdema of the legs. His speech was normal, and there was no evidence of laryngeal paralysis. There was considerable œdema of the lower part of the neck, and marked distension and pulsation of the veins in this region. He experienced difficulty in swallowing solids. The apex-beat was not visible and scarcely palpable; cardiac dullness was increased upwards to the second left space, and slight dullness was also noted in the second right space close to the sternum; the right border reached 1 inch from the midline in the fourth space, but only ¾ inch in the fifth space, the normal angle between the right border of cardiac dullness and the upper border of hepatic dullness being maintained; the left border was 4½ inches from the midline in the fifth left space. The sounds were infrequent (40 per minute), with occasional extrasystoles; a third sound could be heard periodically during the diastolic interval, sometimes occurring early, sometimes in mid-diastole. The sounds were faint at all areas, almost inaudible at the aortic; no murmurs were heard in any area; the second sound at the pulmonic area was relatively accentuated and intoned. The pulse was regular apart from occasional extrasystoles, and of moderate volume; the volume in the left radial was slightly less than

in the right; the arteries were not palpable and the blood pressure was not raised. Apart from occasional rhonchi at each base the lungs were normal. The liver and spleen were not palpable, and there was no albuminuria. The pupils were equal.

The Wassermann reaction was negative. A radiogram of the chest (Fig. 1) shows an enlarged, "pear-shaped" cardiac shadow suggestive of auricular dilatation; there is no evidence of a mediastinal tumour nor aneurysm. An electrocardiogram (Fig. 2) shows an auricular frequency of 86 with slight sinus irregularity; the P wave is broad and notched resembling that seen in mitral stenosis. 2–1 block is present throughout the portion of the tracing shown in the diagram, the ventricular rate being 43, but a further portion of tracing showed occasionally two successive auricular beats reaching the ventricles; another occasional feature was the occurrence

FIG. 2.



The electrocardiogram.

of left ventricular extrasystoles in pairs. The ventricular responses show changes characteristic of a further intraventricular block, approximating to a complete block of the right branch of the auriculo-ventricular bundle. The total duration of ventricular systole is prolonged occupying 0·52 sec.; the P–R interval in those beats in which auricular contractions excite ventricular responses varies from 0·2 to 0·4 sec.; thus it comes about that the total duration of cardiac systole (from the commencement of P to the termination of T) varies from 0·72 to 0·92 sec.; and since the interval between successive auricular beats averages approximately 0·7 sec., alternate auricular beats occur before the termination of the preceding ventricular systole in the majority of cycles. The significance of this feature will be referred to presently.

Course of Illness.—With the lapse of time and confinement to bed the patient's symptoms gradually improved, and four weeks later he was feeling comfortable in bed; he no longer had dysphagia; the œdema of the lower part of the neck had entirely disappeared, and the distension and pulsation of the veins was very much less noticeable. In the condition of the heart itself no change was noted; an electrocardiogram showed the same features as before, with an auricular rate of 98 and ventricular rate of 49; there were still occasional extrasystoles in pairs, but now of right ventricular instead of left ventricular origin. After another three weeks he was allowed up gradually, and in another month he was able to go home: he was able for mild exertion without much dyspnœa but still had occasional slight œdema of the feet at night if he stayed up too long; the cardiac dullness remained unchanged, the sounds had improved slightly in intensity, but the block was still present; the pressure symptoms had entirely disappeared.

Comments.

Apart from the transient dysphagia which was presumably the result of pressure of a dilated auricle on the œsophagus, this case is of interest in view of the mechanism whereby the auricular dilatation appears to have been produced. Dilatation and hypertrophy of the left auricle as a result of mitral stenosis is well recognised; in Bach and Keith's case the physical signs during life were those of mitral stenosis, and although there was no narrowing of the mitral orifice post mortem—in fact, it was actually widened—the changes described as shown by the mitral cusps and chordæ tendineæ appear to be those of an early stage in the development of a certain type of stenosed mitral valve, and are at least suggestive of a considerable degree of mitral incompetence. Apart from valvular lesions, dilatation of both auricles is the rule in auricular fibrillation and in many cases of auricular flutter, where effective contraction of the auricles has ceased, and the chambers become passively distended. The present case, however, illustrates yet another possible mechanism, for it has been shown that every second auricular beat (with occasional exceptions) occurred before the termination of the preceding ventricular systole; on these occasions the auricles must fail to empty their contained blood into the ventricles, and they are consequently full of blood at the commencement of the succeeding diastole; during this diastole they must become overfilled—particularly in the case of the left auricle if the output of the right ventricle remains effective. In due course, if the condition continues, auricular hypertrophy is likely to follow, and once this has occurred the diastolic overfilling will be lessened. Thus the accentuated pulmonic second sound, the broad notched P of the electrocardiogram suggestive of auricular hypertrophy, the occurrence of pressure symptoms, and their ultimate disappearance can all be explained as the result of the heart-block; the latter in this case can only be ascribed to myocardial degenerative changes resulting from disease of the coronary arteries.

It must be pointed out that in order to explain the facts as above the essential feature is, not the presence of heart-block, but the occurrence of a relatively large proportion of the auricular beats at a time when the ventricle is actually contracting. There are other disorders of cardiac rhythm in which this condition may be fulfilled—e.g., certain cases of parasystole—and on the other hand, by no means all cases of heart-block—or even of 2–1 block fulfill the requisite conditions. In an ordinary case of 2–1 block, where the ventricular systole is not unduly prolonged and where the P–R interval of the effective auricular beats is not greater than 0·2 sec., the total duration of a cardiac cycle will not exceed 0·52 to 0·6 sec.; unless the auricular beats follow one another at intervals of less than 0·6 sec., therefore, the alternate beats will not occur before the termination of the preceding ventricular systole; that is to say, unless the auricular rate exceeds 100 per minute the conditions will not be fulfilled. To enable the conditions to be fulfilled with a lower auricular rate, there must be, in addition to the 2–1 block, either a prolongation of the P–R interval of the effective beats, or a prolongation of the duration of ventricular systole (RST period). Similar considerations may be applied to other grades of block and to other disorders of rhythm.

I am indebted to Dr. Ivy McKenzie for permission to publish the case, and to the superintendent of the Victoria Infirmary for permission to reproduce the radiogram.

A NOTE ON THE TREATMENT OF NEURASTHENIA.*

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THE purpose of this paper is to suggest a simple provisional plan for dealing with neurasthenic states. Life, it has been said, is the continuous adjustment of internal relations to external relations. In the mental sphere suitable adjustments depend on adaptability, and if adaptability be deficient or defective appropriate adjustments cannot occur, hence conflict and mental disharmony. Adaptability is largely a constitutional characteristic depending on the predetermined disposition of the brain. Where the predominating feature of a mentality is affective tone, there must follow a tendency to emotional states without which the neuroses could not occur. This tendency may occur in a mind otherwise normal;

* Based on a lecture delivered to the Aberdeen University Post-Graduate Society.

it results simply from a high degree of the affective component. It may also occur in a mind below normal. Neurasthenia is as common in persons highly endowed as in persons below normal. Wherever the feelings get the better of the critical powers, wherever adaptability is deficient or defective, there must result a soil suitable for the growth of functional nervous diseases. Although it is generally accepted that a neuropathic tendency is constitutional, we should remember that, just as good soil becomes poisoned or tired, so the normal constitution under toxic conditions or fatigue may become deteriorated and susceptible to neurotic ailments. We can imagine circumstances which would render neurotic the strongest, the most stable mind. Neurasthenia, then, is a condition depending on a predominating emotionalism, a susceptibility which may be congenital or acquired.

How the Neurasthenic State is Induced.

The determining cause is any circumstance, real or imaginary, which conditions an unpleasant and unacceptable emotion. The adequate stimulus varies with the susceptibility to neurasthenic states. If the susceptibility be slight, the adequate stimulus must be considerable; if the susceptibility be great, the adequate stimulus need be but slight. Neurasthenic susceptibilities are like explosives; it takes a flame to explode one, a spark may explode another, while some explode spontaneously. Pleasant emotions are always acceptable; they cannot determine neurasthenic states. There always exists in neurasthenia some unpleasant and unacceptable emotion. One man hears of his financial ruin. He accepts, perhaps with sighs, his return to poverty and hard gruelling work; he sells his house and his cars, and discharges his servants. He says to himself, "Hard luck!" and as he clenches his hands and sets his jaw, he continues "Ah, well, its no good crying. I'll just have to make the best of things. I'll start again. I'll make good again." This man is no neurasthenic, he has accepted the misfortune and adapted himself to his altered circumstances. His mental digestion is equal to the unpalatable task. Another man hearing of his financial ruin is stunned and drops into a chair. Holding his head in his hands he rolls about and moans and groans. Sleep has deserted him; appetite is gone; his friends have forsaken him; the world has crushed him; he is misery personified. In despair he turns to his doctor, who may prescribe a stomachic and tell him that his stomach is out of order. He miserably carries on and his stomach does not improve; he begins to dread cancer, gets X rayed, has a fractional test-meal, has his stool examined, and generally ends in a worse state than ever. This man has not adapted himself to his environment; he has not accepted the unpleasant fact. This creates a mental state outside his mental entity. There is a foreign body in his mind. The uninvited, unpleasant, and persistent guest is kept at the door, where he creats a disturbance and corrupts all other visitors and thus multiplies the discomfort. The unpalatable body should have been swallowed and digested. The uninvited guest should have been asked in, and the differences settled.

The first step in a neurasthenic state is emotionalism. The unpleasant state cannot be entertained yet cannot be forgotten. The mind becomes preoccupied. This preoccupation has two results: (1) All stimuli are tainted according to the preoccupation; hence dyspepsia becomes cancer, palpitation becomes heart disease—i.e., emotional infectivity. (2) The preoccupation means the inhibition of critical faculties, hence the tendency to accept any statement without criticism; this is increased suggestibility. The sequence, therefore, is emotionalism, preoccupation, emotional infectivity, and increased suggestibility.

The Three Steps in Treatment.

The first point which I stress is, that very careful and sympathetic note should be taken of the numerous complaints. Sympathy and patience will be required, for the patient frequently goes on speaking about his symptoms for an hour or more, and it is the greatest mistake to cut him short. It is of the utmost importance also that notes be taken. There are many medical men who consider this a waste of time and cut the symptom-telling short. These men can never treat neurasthenics with any hope of success. They cannot spare an hour to carry out this absolutely necessary part of the work, but they will waste months in vaguely attempting to do the impossible. The patient should be encouraged to dilate on his troubles, for sometimes the neurasthenic is reticent, and unless you get to know your patient thoroughly—to know his fears, his pleasures, his ambitions, his home life, his habits, and his circumstances you may miss an all-important clue. It is not usually difficult to get him to unburden himself if he has confidence, and I feel very strongly that confidence can be engendered by sympathy, tact, understanding, and a genuine desire to help these patients to recovery. After you have heard his story, repeat it to him; this will keep you right and will also help the patient to appreciate the real interest you have taken in his case. All you have done in this hour is to listen to his story; in reality you have entered into his life, you have got to know him, and he has placed his confidence in you. As a matter of experience I should say you have won half the battle.

At the next meeting, probably a few days later, it is best to subject him to a complete physical examination, an examination which must be thorough and painstaking, each system being taken in turn. You then know his physical state and you increase his confidence in you, but I think it important that on both these occasions you should give nothing away. Assure him that physical examination is a routine affair, and do not attempt to give any interpretation of his symptoms. Your interpretations at this time would probably be wrong and would have to be retracted later; this rather tends to shake confidence.

Your duty is now to associate symptoms and signs; if there be no physical disease then you must analyse his symptoms. Go through them again and you will almost invariably find a common denominator, some unacceptable emotion from which all others are derived. This is usually where experience and knowledge of human nature tells, but it is not a bad rule to be guided by the earliest symptoms. In the case we have mentioned the patient may be seen years after the financial loss; his symptoms might easily be gastric or the wasting might invite thoughts of malignant disease, but the chronological order of symptoms would or should suggest the beginning of his illness. The anorexia would date from that time. The absence of physical signs of organic disease would also indicate a psychopathic disease. Put yourself in the patient's position, assume for a period his mentality and imagine the effect. In fact, I find the easiest way to understand a patient is to imagine I am the patient; it is then usually possible to interpret the symptoms. Distress inhibits appetite; sleep does not come to one who carries a constant mental agony.

The third time the patient is seen I usually find it necessary to ascertain a few matters connected with his symptoms, and by asking a few questions find out whether the general plan of my interpretation is correct. If this be so, then I proceed to unfold the story so that he himself can follow. I take him back to the initial emotional state, indicating how the symptoms occurred and how the others followed, explaining the mechanism as I go along. This does not take very long, usually about half an hour. It is then time to return to the cause under conviction, the original fault, and it will frequently be found that a different presentation of the matter results in its acceptance. Sometimes it is necessary to "predigest" the problem for him. He will then see that he should have acted differently, and nearly always says so. The case is three parts cured, but the morale remains to be improved by encouragement and persuasion; this is where sympathy and his confidence count for a great deal, for without these he will not respond. With them his morale is enhanced, he will accept unpleasant

facts, he will adapt himself thereto. The ruined man resumes means to mend his broken fortunes.

The Time Element.

The treatment takes time; it cannot be done in a day. It may be wise to isolate the patient for a time. Physical therapy is of value as means to an end, and any physical disorder should most certainly receive its proper treatment. In the main, however, the treatment is psychotherapy, a method at present rather in disgrace. Just as the healing knife of the surgeon is a murderous weapon in a villain's hand, so is psychotherapy in the hands of ignorant and unscrupulous persons. In the hands of the physician the methods I suggest can bring nothing but peace and happiness to his patients and satisfaction to himself. It is not suggested that this treatment will cure the predisposition to neurasthenic conditions, but that it will, so to speak, help the patient over a fence in the rough road of life. Curative treatment depends chiefly on prophylaxis. If we could get the child's mind in the plastic stage before predispositions were fixed, then it might be possible so to lessen the tendency to emotionalism that neuroses would not occur.

A SIMPLE METHOD OF TREATING CAVERNOUS NÆVI.

By G. B. Dowling, M.D., M.R.C.P. Lond.,
DERMATOLOGIST TO THE WEST LONDON HOSPITAL; ASSISTANT PHYSICIAN IN THE SKIN DEPARTMENT, GUY'S HOSPITAL.

The treatment of cavernous angioma has always been a rather difficult problem. While the probable spontaneous disappearance of these tumours may be prophesied, for the patients are almost always infants or young children, the majority of parents prefer to have them removed as early as possible.

Application of carbon dioxide snow is ineffective though it will destroy the strawberry mark which often overlies the subcutaneous angioma, and it may even efface an overlying port wine stain. Apart from surgical excision, which is undesirable in an infant, and in some situations impossible, the methods commonly used are:—

1. Application of radium; a reliable method in the earliest cases, but likely to leave a radium scar.
2. Electrolysis with single or multiple platinum points; painful method necessitating an anæsthetic.
3. Electro-coagulation with a needle electrode; also a painful method, and certain to damage the skin around the parts through which the needle is passed.

It occurred to me, as it has probably occurred to others, that it might be possible to destroy these lesions by thrombosing their contents by means of one of the coagulants used in the treatment of varicose veins. I have treated five cases at the West London Hospital during the past year by injecting the commonly used solution of quinine bihydrochloride and urethane; the result has been very satisfactory.

In the first case, an infant of six months, had two injections at intervals of a week into a small cavernous nævus situated on the back. The child was not brought up to see me for three months, so I was unable to observe its progress, but the eventual result was a complete flattening of the lesion, leaving a small disc of replacement fibrosis in the skin. The next two cases were treated concurrently. In one there was a cavernous nævus situated in the right labium majus; it received three treatments, carried out at intervals of a fortnight, 4 mm. of the solution being injected at a time. This nævus was somewhat shallow, and sloughing at one or two points took place; this, however, gave rise to very little trouble and the result was excellent, all that now remains being flaccidity of the skin over the part in which the nævus was situated. The other case, a cavernous nævus of 1½ inches diameter on the back, had three treatments; it also disappeared, leaving again a flaccid overlying skin. Finally, two cases of cavernous nævus of the scalp have been treated. These required three treatments each, with the same results as in the former cases—that is, gradual disappearance of the nævus, leaving an overlying, somewhat baggy skin.

About 4–5 minims of the solution of quinine is injected at a time. The needle is passed in near the base of the nævus and about a minim is injected in three or four places. It is probable that many of the lacunar spaces are not reached by the initial treatment, but the immediate effect is an apparent solidifying of the whole nævus. In a fortnight the lesion flattens down somewhat, and the skin over it becomes slightly flaccid. It is then treated in the same way again, selecting parts which appear to have been unaffected by the first treatment. In a fortnight a further degree of shrinking of the nævus is observed, and a third treatment may then be given or it may be left for a few months, and further treatments given if necessary.

I have not treated a cavernous nævus on the lateral aspect of the nose, a common and unfortunate position, because of the possibility of extension of the thrombosis to the cavernous sinus, Although the number of cases that I have so far treated is small, I believe that thrombosis by injection may prove to be the future method of choice.

Reports and Analytical Records.

VINO SAN RAFAEL.

ESPECIALIDAD DE LA SOCIEDAD VINICOLA TARRAGONA. (SPANISH PRODUCE, BOTTLED IN GERMANY.)

THIS rich, red, fruity wine when analysed gave the following results:—

Alcohol by volume	18·24 per cent.
Equivalent to proof spirit	32·0 ,,
Total acidity as tartaric acid	0·20 ,,
Volatile acidity as acetic acid	0·03 ,,
Total extract	23·0 ,,
Consisting of—	
Sugar	22·18 ,,
Mineral matter, protein, &c.	0·82 ,,

The preservatives salicylic, benzoic, and sulphurous acids were tested for with negative results.

The wine, although it has the normal alcoholic content of a port, contains almost three times the amount of extractives. The acidity is low and the wine, whilst possessing a slightly astringent flavour, may be regarded as a pure product, and of value as a tonic.

CANNED FISH.

(1) PONY SMOKED HERRINGS IN TOMATO SAUCE; (2) IVANHOE BRAND SELECTED NORWEGIAN BRISLING; (3) IVANHOE BRAND BONELESS KIPPER SNACKS; (4) FINEST NORWEGIAN SILD.

(THE QUALITY CANNING CO., STAVANGER AND LONDON.)

The following four different kinds of fish were examined—viz., Pony Smoked Herrings in Tomato Sauce, Ivanhoe Brand Selected Norwegian Brisling in pure olive oil, Ivanhoe Brand Boneless Kipper Snacks, and Finest Norwegian Sild in pure olive oil.

—	Pony smoked herrings with tomato.	Brisling in olive oil.	Kipper.	Sild in olive oil.
Total weight of contents of tin	280 g.	111 g.	89·5 g.	114 g.
Weight of fish	260 g.	92 g.	89 g.	98 g.
Percentage of fish in total contents	95	82·9	100	86
Moisture (per cent. on drained fish)	65·2	59·5	66·8	65·6
Proteins (per cent. on drained fish)	19·2	19·5	21·6	20·6
Ash (per cent. on drained fish)	4·0	5·3	4·46	4·7
Fat (per cent. on drained fish)	11·6	15·7	7·14	9·1
Calorie value per lb. of drained fish	846·6	1025·2	703	767

The different fish were obviously well selected and of good quality. They were clean, palatable, and efficiently sterilised in the packing process. The calorie figures indicate the relative value of these fish as food materials.

GENERAL MEDICAL COUNCIL.

PENAL CASES.

(*Continued from p. 1197.*)

Alleged Adultery with a Patient.

The Case of Frederick Howard Pratt, registered as of 331, Brownhill-road, London, S.E. 6, M.R.C.S. Eng., 1925, L.R.C.P. Lond., 1925, who had been summoned to appear before the Council on the following charge :—

"That you abused your position as a medical man by having intimate relations, at your surgery at 89, Stondon-park, Lewisham, London, S.E.23, and elsewhere, between May and November, 1928, with a married woman with whom you stood in professional relationship ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The complainant was the husband, who was represented by Mr. J. A. T. Good, of Good and Co., solicitors. Dr. Pratt appeared and was accompanied by Mr. Laurence Vine, instructed by Mr. Denton Rowe, solicitor.

Mr. Good stated that complainant had visited Dr. Pratt for ophthalmic treatment in 1927, and his wife had consulted the doctor a few days later. Violet-ray treatment had been ordered and had been administered, on some occasions by Dr. Pratt's wife. In January, 1928, complainant's wife had consulted the doctor about dyspareunia, and had been given treatment. In March Dr. Pratt had advised consultation and, as he had handed the written address of the specialist to complainant's wife, he had put his arm around her and kissed her. She had not told her husband. On the next day the doctor had again kissed her, and said he had "never felt like that before." On Oct. 14th she had had an operation at St. John's Hospital, and had then been found to be pregnant. It was not suggested that the child was not her husband's. Dr. Pratt had made advances to her on a number of occasions, but had been repelled. The first intimacy had taken place at the surgery in May, and during the doctor's holiday in July she had written to him affectionately. In September Mrs. Pratt had been away and the doctor had invited complainant's wife to his house, where intimacy had again taken place on a couch in the consulting-room. There was no doubt that she had been absolutely infatuated and had pursued the doctor, strongly resenting his attempts to withdraw from the relationship. Intimacy had continued up to three weeks before her confinement. While in the nursing home she had told the doctor that he was not treating her properly, as he was taking up with a nurse. On the last day of 1928, in a local restaurant, she had informed her husband of what had happened. In the evening the complainant and his wife had met the doctor, who had said intercourse had only happened five times, and that all had been over four months before. There had been a scene. The complainant, considering his young baby, had taken the line that the doctor must leave the neighbourhood in a month. Later he had seen the doctor at his surgery, and had left a note saying he would complain to the General Medical Council.

Complainant's wife testified that she had first seen Dr. Pratt in October, 1927, when she had accompanied her husband to the surgery, and later had seen him professionally by herself. She confirmed the account given by complainant's solicitor of subsequent events, and gave details of Dr. Pratt's advances to her. Misconduct had first taken place in the surgery in May, 1928, and had been repeated two or three times a week thereafter. She had written to the doctor at Rotterdam and Antwerp when he was on his holiday, but had never had an answer. He had never suggested discontinuance. She described the visit to the house, a visit to the bedroom, and intimacy in the consulting-room. The last intimacy had been on Nov. 2nd, and the baby had been born on Nov. 23rd. In the nursing home she had told the doctor that she had been informed that the doctor was "hot stuff" and could "not leave women alone, married or single," and that he had taken out a sister at the home. At the interview between the three parties Dr. Pratt had said his wife would probably divorce him, and that he had never cared for witness. He had, in fact, given up his surgery. Witness had seen Dr. Pratt and his wife subsequently. Before making her declaration she had telephoned Dr. Pratt and had gone to see him and talked it over. She had said she would not make the declaration if she could believe that he had ever meant anything he had said. She had suggested that he should undertake the education of the baby, and the doctor had agreed on condition that her husband withdrew the complaint. He had, however, never sent the promise in writing.

Cross-examined, she said she had married in 1926. She had not complained when Dr. Pratt had first kissed her because long before that he had won her sympathy. She denied that she had pursued and waylaid the doctor, writing and telephoning almost daily, or that she made the complaint in a spirit of vindictiveness. She had not behaved like a person deranged after her operation. Every time she had visited the doctor he had asked her to come again. She did not agree that she had been infatuated ; she had been in love with the doctor. Dr. Pratt had not remonstrated with her for writing or pestering. She had told him towards the end that she felt he was getting tired and he had only to say so frankly and she would back out. She had not behaved like a distracted woman in the waiting-room. She had never been removed by the police. On one occasion in January she had waylaid Dr. Pratt after a quarrel with her husband ; this was the only episode of the kind. She had not gone round to extract money for the education of the child ; she had gone to see if he had ever cared at all. Her husband had known nothing about the visit. The support of the child had been the doctor's suggestion in the first place. She had not concocted the story of intimacy because she was jealous and because he would not educate her child.

Re-examined : Up to the time of the present inquiry Dr. Pratt had never denied intimacy. She had never either wanted or received money from Dr. Pratt.

By the Legal Assessor : Intimacy had usually taken place between 9 and 10 in the morning at the surgery, at first always as a result of a message from the doctor fetching her over. The surgery was at the back of the house. They had had an arrangement whereby she rang three times and the doctor opened the door to her. On some occasions the landlady had opened the door. Usually witness had gone straight into the surgery, but on the rare occasions when other patients had been waiting she had gone into the waiting-room. Intimacy had taken place in her house at various times of day in various rooms when she was alone in the house. Her husband had his own business as an iron founder and should be able to afford to educate his child by the time it grew up.

By the President : She had never expected replies to her letters. She had been rather annoyed at the doctor's refusal to take her out in his car.

The complainant identified professional receipts from Dr. Pratt dated October, 1927, April, 1928, and an unpaid account October–December, 1928, including confinement, and related other accounts which he had paid. His wife's mind had been perfectly normal after the operation and always. He described the interview on Jan. 1st, confirming Mr. Good's account of it. Dr. Pratt had said it had not been a question of love but of pure physical attraction. At his private interview with Dr. Pratt, the doctor had remarked that medical students were warned against a certain type of woman. There had been no denial of the intimacy. Subsequently witness had consulted solicitors, had threatened proceedings before the General Medical Council, and had withdrawn this threat at the request of his wife. On April 9th he had written again saying that he proposed to proceed

with the complaint, as the doctor had not kept the spirit of their agreement and had been seen about the neighbourhood.

Cross-examined, he admitted that the doctor had told him when he threatened to report him to "get on with it," but did not agree that he had treated both complainant and his wife with contempt. He had never said he was satisfied with Dr. Pratt's explanation. He had noticed that his wife was very unhappy and highly strung after the operation. The doctor had said "as far as clearing out of the neighbourhood is concerned, the surgery does not pay and I have been meaning for some time to give it up." Witness knew nothing of and would not have approved of the suggestion to educate his child. His wife had never suggested withdrawal of the complaint on any such condition. He had not realised how infatuated his wife had been with Dr. Pratt.

By the President: He had heard of the General Medical Council from his cousin, a doctor. He had consulted the solicitor about divorce.

By the Legal Assessor: The doctor's words had been that "it had only occurred five times"; he had not charged the doctor with intimacy, as it had been taken for granted. As the doctor had come in he had said "I understand your wife has told you all about it." The term "intimacy" had never been used.

Mrs. Cokayne testified that she had worked in the house of complainant and had heard the quarrel on Jan. 1st, and had identified the words "Won't you kiss me good-bye?" said by Dr. Pratt.

Cross-examined, she said she had heard voices for more than half an hour but had only heard this one sentence. She was certain these words had been said by Dr. Pratt.

By the President: She supposed the parties had come out into the hall when she had heard this expression.

The Defence.

Dr. Pratt, examined by his counsel, said that he had started practice at the surgery in November, 1925, and was still carrying on practice in the neighbourhood, but had given up the surgery. Complainant's wife had consulted him for pruritus vulvæ, and as this had not responded to Lassar's paste she had been put on sunlight treatment. He described in detail the geography of the surgery to illustrate how little privacy there was there. He agreed that he had usually seen complainant's wife between 9 and 10 A.M., but she had been received absolutely as any other patient and there had been no arrangement of ringing three times. He had never kissed her at any time. During her pregnancy she had visited the surgery about once a fortnight. She had begun to get anxious about her confinement, but he had not noticed anything abnormal towards himself until September. There was no truth at all in her allegation that intimacy had taken place between May and September. The right ovary had been removed and this, together with her pregnancy, had seemed to him to account for her frequent visits and anxiety. Between September and November she had been perpetually at the surgery; it was absolutely untrue to say she had only come at his request. She had started writing letters just before his holiday in July and had written two while he was away. He had been very surprised to see them and had torn them up. He had noticed no abnormal affection for himself. She had accosted him on Christmas Eve as he left his surgery, thanking him for looking after her so well and proffering a petrol lighter as a gift. He had taken this home and shown it to his wife. On the last Sunday in the year the husband had rung him up saying she was in a terrible state of nerves. He had gone round and found her absolutely incoherent and hysterical. He had never seen her like that before and had prescribed valerian bromide. He had been in bed with influenza on Jan. 1st when she had rung up; he had refused to go, but later a new patient had rung up. He had agreed to get up to see the other patient and so had acceded to her second request for a visit. Mrs. Pratt had driven him to the house. He had found complainant's wife in the same excited state. She had said "I've told my husband everything" and that this had included intimate relations with him. He had said "you know that is absolutely untrue." She had wept and he had left. In consequence of a conversation with his wife he had telephoned complainant that evening and had visited him to explain the patient's state and deny the allegations. He had said to complainant "You know that the whole thing is absolutely untrue," and had repeated this to complainant alone. He had never said "it only occurred on five occasions." Complainant had said, "Oh, I could get you turned off the Register. I have a cousin high up in the profession who has influence and who could get you knocked off." Witness had replied "Get on with it then," and had walked out. That evening complainant had rung up to say he was not doing any more and witness had simply put the receiver down. A few days later he had found a note saying complainant was going to report the whole matter to the General Medical Council. About a month later he had met complainant's wife, who had refused to leave him. He had taken refuge in the house of some friends, but she had waited for him and tried to follow him on to a bus and a tram, and he had asked two police-sergeants to see her home. About May she had appeared in the waiting-room; he had asked two other patients to remain outside in the passage and listen to the conversation with complainant's wife. She had proposed that if he would bring up her child as he would one of his own she would withdraw the complaint. He had absolutely repudiated the suggestion and she had become hysterical. Her account of this interview was absolutely untrue. He had never carried on with nurses, nor had complainant's wife ever spoken of it to him. He had not said "Kiss me good-bye," but had probably said "Good-bye." He had never on any occasion had sexual connexion with complainant's wife and had always denied the allegation.

Cross-examined, he said he had torn up all her letters, many of them unread. They had not been professional letters but they had not been love-letters. He had not told the husband because he had put them down to her mental state and had ignored them.

By the Legal Assessor: He had told complainant's wife where he was going on holiday but not when he would be at certain places. She had known how to follow the movements of the ship he was on; it was a definite routine cruise. His surgery was overlooked by several houses; when consulting he had had the curtain drawn.

By the President: He had not asked her to write to him nor had she asked if she might write. She had just said she could find out the movements of the ship. There had been nothing in these letters or in her behaviour to arouse his suspicions of the state of her affections until towards the end of the eighth month of her pregnancy. No reference had ever been made in interviews to the letters. Complainant had not given him a month to clear out; he himself had brought the subject up, saying it was curious that he had arranged to close the surgery.

Mrs. Pratt confirmed the material facts as related by her husband. She had noticed a great alteration in complainant's wife after the birth of the child and had regarded her as deranged. Witness had had experience as a nurse.

Mrs. Hooper testified that she had assisted in the housework at Dr. Pratt's house and had seen complainant's wife there on May 21st. A patient, Mrs. Smith, had been present at that time and they had both been asked by Dr. Pratt to listen to the conversation. She related the conversation, confirming Dr. Pratt's account of it. Complainant's wife had first mentioned the education of the child and the doctor had said "Certainly not." When she came in and when she went out she had been very agitated, and she had been waiting outside in the road half an hour later.

Cross-examined, she said complainant's wife had appeared to be demented. Witness had not known

why the doctor had asked her to listen or why he had said complainant's wife was a dangerous woman.

Mrs. M. T. Smith confirmed this account of the interview in all particulars.

Mr. Vine addressed the Council, sketching the case as an example of the lengths to which a neurotic woman would go and pointing out the absence of any corroboration of her story.

Mr. Good argued that a professional man receiving affectionate letters from a woman patient and destroying them was acting suspiciously.

After deliberation in camera, The President announced the decision of the Council as follows :—

"Mr. Pratt: I have to announce that facts alleged against you in the Notice of Inquiry have not been proved to the satisfaction of the Council. The case is, therefore, dismissed."

The Case of Donald McGregor Stewart, registered as of 5, Waunwen, Nantymoel, Glam.; L.R.C.P. and S. Edin., 1917, L.R.F.P.S. Glasg., 1917, who had been summoned to appear before the Council on the following charge :—

"That you were convicted of the following misdemeanours —viz., (*a*) At the Bridgend Petty Sessions: (1) On Oct. 16th, 1926, of being drunk whilst in charge of a motor-car, and were fined £3 and your driving licence suspended for 12 months; also of driving a motor-car to the danger of the public, and were fined £1; (2) on Oct. 8th, 1927, of being drunk, and were fined 10*s.*; also of using indecent language, and were fined 30*s.*; (3) on Nov. 26th, 1927, of using indecent language, and were fined £3 or 14 days; (4) on June 16th, 1928, of using indecent language, and were fined £2 or 14 days' hard labour; (5) on August 18th, 1928, of being drunk and disorderly, and were fined £1; (6) on May 11th, 1929, of using indecent language, and were fined £3 or 14 days' hard labour; and (*b*) At the Ystrad Police-court: (7) on June 25th, 1928, of using indecent language, and were fined £3."

Mr. Stewart appeared in answer to his notice.

Mr. Harper presented certified copies of the convictions and explained that Mr. Stewart had not appeared earlier in respect of the convictions in 1926 and 1927 because the first four had all been reported together to the Registrar, who had written in October, 1928, warning Mr. Stewart that any further conviction would cause him to be summoned before the Council. The actual language used by Mr. Stewart had been circulated to the members, and in the whole course of his experience Mr. Harper had never known such language used by a medical man.

Mr. Stewart addressed the Council on his own behalf, pleading as extenuating circumstances his war service, testimonials to his work and character, an organised movement to prevent him from practising in the valley, and a severe motor accident involving a compound fracture of the skull in 1926. He still suffered from extreme irritability and scotoma as a result of this injury. He related the events leading to the various fines, claiming that he had been wrongly convicted, largely owing to the animus of a certain constable. He did not think he could possibly have used that language. He expressed his great regret, promised that the offence should never be repeated, and said that he had become a total abstainer.

Mr. H. E. Lewis, clerk to the insurance committee for the County of Glamorgan, testified that Mr. Stewart had increased his panel list every year since he had started. He had appeared several times before the Medical Insurance Subcommittee on the question of these convictions. The subcommittee had talked very seriously to him but did not feel justified in suggesting removal of his name from the list. The subcommittee would be very much surprised if the Council took extreme measures with Mr. Stewart.

The President pointed out that some of the convictions antedated the accident.

In answer to questions by the President, Mr. Stewart said that he had only defended one case; the bench of magistrates had been the same on each occasion. He read a testimonial from a professional colleague.

The President announced that judgment would be postponed until the November session, 1930. Before that date Mr. Stewart should furnish the Registrar with the names and addresses of professional colleagues willing to testify to his good conduct in the interval, and he must clearly understand that in the event of any further conviction of a like nature in the meantime the Council might direct the Registrar forthwith to remove his name from the Register.

The Case of John Caldwell Fergusson, registered as of 10, Upper Northgate-street, Chester; M.B.E., M.C., L., L.M., 1915, R.C.P. & S. Irel., who had been summoned to appear before the Council on the following charge :—

"That you were on August 6th, 1929, convicted at the City of Hull Police-court of the following misdemeanours—namely, (1) that you on April 29th, 1929, being a person authorised to supply preparations, unlawfully did not keep in accordance with the provisions of Regulation 11 of the Dangerous Drugs (Consolidation) Regulations, 1928, a registe and enter therein true particulars with respect to every quantity of a certain preparation, to wit, one pound of tincture of opium obtained by you, contrary to the before-mentioned Regulations made under Section 7 of the Dangerous Drugs Act, 1920, and were fined £2 2*s.* or 29 days' imprisonment and £3 3*s.* costs; and (2) that you on May 7th, 1929, being a person authorised to supply preparations, unlawfully did not keep, in accordance with the provisions of Regulation 11 of the Dangerous Drugs (Consolidation) Regulations, 1928, a register and enter therein true particulars with respect to every quantity of a certain preparation, to wit six ounces of liq. morphinæ hyd., obtained by you, contrary to the before-mentioned Regulations made under Section 7 of the Dangerous Drugs Act, 1920, and were fined £2 2*s.* or 29 days' imprisonment and £3 3*s.* costs."

Mr. Fergusson sent a medical certificate stating that he was suffering from paresis of the left side and tuberculosis of the right lung, and was unable to attend.

Mr. Harper read a long letter he had received from Mr. Fergusson. His poor health and lack of money had prevented him from making a good defence, and he had wrongly supposed that the onus of proof was on the prosecution. His functional disability dated from the time when he had been blown up in Flanders and he had had frequent attacks ever since, involving constant periods of rest alternating with light work. He had had an attack on the morning of the case in court, and his solicitor had not known the Act. The conviction had arisen from the failure of the doctor whose practice he was taking to hand over the poisons register. Mr. Harper read a letter from the chief constable of Northallerton, stating that a local doctor had asserted that Dr. Fergusson was a drug-taker and unfit to practise, and relating several incidents in which Dr. Fergusson had been involved. After deliberation in camera the President announced that the Council had not seen fit to erase Dr. Fergusson's name from the Register.

An Erasure for Drunkenness.

The Case of John Joseph Macabe, registered as of 58, Brunswick-street, Chorlton-on-Medlock, Manchester, M.B., B.Ch. 1918, N.U.Irel., who had been summoned to appear before the Council on the following charge :—

"That you were on April 3rd, 1929, convicted at the Manchester City Police-court of the following misdemeanour —viz., of being drunk and incapable, and were fined 10*s.* or 7 days' imprisonment and your bail of 20*s.* forfeited."

Dr. Macabe had twice before appeared on similar charges. He did not attend and was not represented. The Council directed the Registrar to erase his name from the Register.

COMMITTEE BUSINESS.

EXECUTIVE COMMITTEE, NOV. 25TH.

Official notification was read of the reappointment as members of the Council of Sir George Newman (Crown nominee) for five years from Oct. 9th, 1929, Prof. John Beresford Leathes (representative of the University of Sheffield) for three years from Oct. 27th, and Sir John Moore (representative of the Royal College of Physicians of Ireland) for one year from Oct. 18th.

Restorations to the Register under Section 14.—The prescribed conditions having been fulfilled, the

llowing names, removed through the omission to eep the Registrar informed of change of address, ere restored to the Medical Register :—

Mrs. Gertrude E. Bartlett, Thomas L. Bonar, Neville E. hallenger, Thos. H. R. Davies, Mrs. Rose C. D'Monte, eorge G. Dooley, Bernard C. Ewens, Leonard M. Gabriel, illiam E. Giblin, John F. Haynes, Sidney Hughes, George . Jeaffreson, Mrs. May E. Law, Vinayak L. Manker, Charles . H. Paley, John F. Woodyatt.

Curriculum of the Welsh National School of Medicine. pproval was given to the grant of a Charter of ncorporation with the proviso—

That the curriculum should be so framed as to afford fficient opportunities for the study, during the last three ears of the course, of physics, chemistry, biology, anatomy, nd physiology, in their practical applications to medicine, rgery, and midwifery, and that the student's knowledge these applications should be subject to test in the final xamination,

recommendation to which the Council attach great nportance.

Reciprocity.—The Royal College of Surgeons of ngland called the attention of the General Medical ouncil to the difficulties in matters relating to reci- rocity of medical registration between this country nd British Dominions, particularly as affecting edical graduates in certain British Dominions esirous of obtaining the F.R.C.S.

The Italian Ambassador having inquired whether nder the Anglo-Italian agreement of 1925 persons ossessing Italian qualifications were entitled to ractise in the Union of South Africa, and having sked for a complete list of territories between which nd Great Britain reciprocity existed, was informed hat the only parts of the Dominions with which eciprocity did not exist were the following Provinces f Canada: British Columbia, New Brunswick, ntario, Quebec, and Saskatchewan—and that at the resent time there was limited reciprocity with New ealand.

"Army Medical Service" as an Address in the egister.—In consequence of the exception taken by practitioner to the address "Army Medical Service," he Army Medical Department of the War Office ere asked if, in their opinion, the time had come hen a change should be made in the title, which had een in use for something like 30 years. They eplied giving as the correct description different esignations for the various ranks, and it was sug- ested to them that a generic title which would cover ll officers in the Service regardless of rank, and referably regardless of whether they were still erving or not, was highly desirable for the reasons hat army rank was not given in the Register, and hat it would be difficult for the Council to ascertain ith accuracy whether or not officers were still erving. It was suggested that if it was thought esirable "Royal Army Medical Corps" might be ubstituted for "Army Medical Service," and the epartment replied that the case might be met by he substitution of the word "Army" for the present erm. It was finally decided to retain the present esignation as no real case seemed to have been made ut for a change, and it was gathered that there was o strong desire on the part of the department that ny change should be made.

Home Office Authorisation.—The Home Office had otified the Council on Oct. 14th that authorisation nder the Dangerous Drugs Act, 1920, had been ithdrawn from John Caldwell Fergusson, Reginald eorge Karn, and Frederick Stuart. The cases of rederick George Lewtas, John Symington Stewart, nd Sydney Robert Walker had been previously otified.

Other Committees.

Study of Biophysics and Biochemistry.—Sir Humphry olleston, chairman of the Education Committee, resented a report on professional instruction in hysics and chemistry in their relation to medicine, articularly during the clinical years. In a special eport the committee publish the replies received from the various educational authorities which show that the pre-clinical instruction given in biology, chemistry, and physiology appear satisfactory, but many of the bodies have not provided any information about the continuation of teaching in these subjects during the clinical years, while others remark that the amount of instruction incidentally given during the courses in pathology, pharmacology, and clinical medicine must obviously be determined by the demands of the subject and the personal leanings of the teacher. Sir Humphry moved that the report be referred back until all the teaching bodies had supplied adequate answers on this point. The committee recognise the force of the argument that the pre-clinical subjects should be taught by the clinical teachers in application to the clinical subjects, but it is also aware that all clinicians cannot be presumed to be sufficiently au fait with the progress of biochemistry, physiology and chemistry to foresee the application of their most recent advances to medicine. Applied anatomy is the pre-clinical subject most often taught in a special course during the clinical years, but the clinical pathology course covers a good deal of the ground that might be dealt with in a special course of applied physiology or biochemistry.

The *Examination Committee* has been paying attention to the subjects of medical jurisprudence and public health, and Sir Norman Walker, the chairman, presented an interim report on this subject. In most medical schools courses of instruction are given on each of these two branches, and very often a medical officer of health is the professor of public health or there is a link between the professor and the local health department. Generally speaking, the course of instruction in each subject lasts one term, and students are examined in their final examination, or occasionally at the end of the fourth year of study.

The *Pharmacopœia Committee* reported that 2360 copies of the British Pharmacopœia, 1914, were sold in the year ending Nov. 23rd, 1929, bringing the total to 58,183 copies. Subcommittees on pharmacy, pharmacognosy, and pharmaceutical chemistry have been formed and are preparing monographs, 93 of which have already been circulated. Other subcommittees have been formed to deal with the special subjects of ergot and its preparations; drugs of the arseno-benzine group, standards for ampoule glass, and the preparation of sterile solutions. The commission have inquired into several substances which it is proposed to include in the Pharmacopœia, such as tetra-iodophenolphthalein sodium, thyroid gland, and tinctures of strophanthus and squill. The commission hope to establish close coöperation with the United States Pharmacopœia Committee so that the two Pharmacopœias may be unified as far as possible. The report includes a copy of correspondence referring to the proposed international agreement on potent drugs.

The *Public Health Committee* has been visiting examinations for the diploma of public health, and has found that, on the whole, the implications of the Council's regulations have been satisfactorily carried out. Those regulations made such a change in the requirements for the diploma work that difficulties and objections might well have been expected but they are, in fact, conspicuous by their absence. The Committee reports the general impression that the standard is well within the powers of candidates who devote themselves whole-heartedly to their course of study. The examination on special subjects such as meat, structure of premises, and fevers are all strictly practical and conducted at appropriate centres. The diploma covers so wide a field that the balance of theoretical and practical is extremely difficult, and the Committee feels that time alone will show what modifications are desirable in the continuous adoption of the curriculum to the ever-increasing specialisation of public health work. The report was presented by the chairman, Sir John Moore, and Dr. Letheby Tidy was appointed a member in place of the late Sir Jenner Verrall. Dr. H. B.

Brackenbury was elected to take Sir Jenner Verrall's place on the Executive Committee.

Election Rules.—Dr. J. W. Bone, seconded by Dr. H. B. Brackenbury, carried a motion that it be referred to the Finance Committee "to consider and report to the Council whether the regulations for the conduct of elections to the Council (Section 8 of the Medical Act, 1886) and the 'Instructions to Voters' issued in connexion therewith might not be simplified and/or improved." Dr. Bone pointed out that there had been a steady increase in the number of voting papers rendered invalid and that this increase had been a subject of comment in the medical press. The regulation which covers the system of voting had been laid down by the Privy Council, but there were certain incompatibilities between the instructions in the leaflet and those on the ballot paper. It was not certain, for instance, whether the paper was to be sent off or received on the appointed day. Other regulations appeared to be trivial; for example, a paper was rendered invalid if it were folded in the wrong direction. Mr. H. L. Eason quoted the figures of the electorate and the spoiled ballot papers for several past years and showed that there was no real increase in the number of papers rendered invalid. He pointed out that the majority of faults for which papers had been rejected at the last election were faults of gross carelessness and not of trivialities. A large number of empty envelopes had been received, and many others had not been signed; only eight out of the total had been wrongly folded. Sir Robert Bolam pleaded for simplification of the procedure in order that electors should not be deterred from exercising their vote. The matter was referred to the Committee and the Committee was authorised to invite Dr. Bone to attend their meeting to discuss it.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ORTHOPÆDICS.

AT a meeting of this Section held on Dec. 3rd the chair was taken by the President, Mr. MCCRAE AITKIN, and Mr. W. H. OGILVIE opened a discussion on

MINOR INJURIES ABOUT THE ELBOW-JOINT.

He classified the minor injuries as partial fractures, partial dislocations, tears of the capsule, traumatic arthritis, and injuries to muscles. He discussed the anatomy of the joint, and demonstrated its division into a posterior trochlear and an anterior condylar portion, resembling those of the lower end of the femur; and pointed out the crescentic facet on the olecranon surface of the ulna, which met the outer lip of the trochlea in full extension; and the triangular groove between the outer part of the transverse groove dividing the greater and lesser sigmoid cavities. The strength of the capsule lay, he said, in the lateral ligaments. The synovial cavity in both radio-ulnar joints was sacciform, allowing for vertical as well as rotary movement. Intracapsular synovial pads were highly developed in the elbow and intra-articular synovial fringes were abundant.

The elbow was designed for use primarily in positions between 110° and 170° of extension and between half and three-quarters pronation. Only within this range was the olecranon portion of the greater sigmoid cavity fully engaged by the trochlear surface of the humerus. In flexion beyond 110° it rode in a groove which was shallow on the outer side, so that part of its bearing surface was exposed. The real humero-ulnar articulation was between the anterior parts of the trochlea and the coronoid articular surface of the olecranon. The olecranon part of the ulna combined the function of a muscular process like the great trochanter and a steadying guiding mechanism like that of the malleoli, the latter function only being called into play in the later degrees of extension. No real disability followed excision of the head of the radius; the ulna formed a platform on which the radius, bearing the hand, was free to rotate. The carrying angle was one of 10–15° and was present in the fœtus and at all ages; it diminished as the arm was flexed and was due to the varying depth of the inner lip of the trochlea. The only acceptable explanation of the carrying angle was the constant use of the half-pronation position. In the position of use—half pronation and nearly complete extension—the purpose of the carrying angle became apparent: to allow the radius to lie in a continuation of the long axis of the humerus. The position of rest—slight flexion and rather more than half pronation—was maintained by the brachialis anticus and from this position the elbow moved for its various functions.

Two distinct sets of uses would be distinguished, those concerning the outer world and those concerning the individual. The exteroceptive range of the elbow embraced the positions from about 90° to 170° of extension and from half to full pronation and involved such movements as attack, cutting food, climbing, and handling tools, and within this range stresses were likely to fall on the elbow-joint. The articular surfaces were fully engaged and the joint was stable. The proprioceptive range included all those movements concerned with the person; from a right angle to full flexion and from half to full pronation the joint surfaces in this range were poorly adapted and the joint depended on ligaments, but was not exposed to great stress. Full supination was rarely used in extension or full pronation in flexion. Full extension did not occur in natural use. True hyper-extension was rare. The apparent hyperextension in some women was due to the demonstration by extreme supination of an exaggerated carrying angle. Upward movement of the radius was checked by the interosseous membrane and downward movement by the oblique cord. The up and down movements of the radius invited comparison with the knee.

Fractures and Dislocations.

Most injuries of the elbow were due to indirect violence. The trochlea and still more the capitellum were carried well forward and apt to be fractured forwards into the joint. Full extension, however, was rare and could not be maintained in the face of force. Falls on the outstretched hand tended to flex the elbow and not to hyperextend it. In the ordinary fall on the outstretched hand the lines of force passed out of the limb posteriorly at an angle and caused supracondylar fracture or backward dislocation. The involvement of the radius depended on the degree to which force applied to it was passed on to the ulna. In a fully pronated and radially adducted position the interosseous ligament was somewhat relaxed and the radius was forced against the capitellum; the blow would therefore tend to fracture the radial head. In partial supination and ulnar adduction a dislocation at the elbow-joint or a fracture of the humerus would be more likely to occur. If the arm was partially flexed the blow would flex it further and the main force be taken on the olecranon; then the trochlea was driven like a cold chisel into the sigmoid fossa and fractured the olecranon transversely. Direct violence usually affected the ulna, but might break any bone.

Supracondylar fracture without displacement was very common in childhood and might be missed in a poor radiogram. Bruises and sprains caused very little limitation of movement in a child and only a little swelling. Treatment involved a few days of immobilisation with active movements from the start. If there was no periosteal stripping there was no risk of bone formation in early active movements. *Isolated fractures of the internal epicondyle* were due to muscular

iolence and were seen in adults. The joint was not ıvolved and the loose fragment was pulled down by ıe flexors. Correct position and bony union were ldom secured but the disability was slight. *Fractures f the internal condyle* were oblique, entered the joint, ere common in children, and were usually due to lls on the outstretched hand. The broken fragment ɔde up and the displacement tended to recur when action was released. *Fractures of the trochlea* alone ere very rare. The *external epicondyle* was so small ıat only cracks or detachment of flakes could be ıcluded as isolated fractures. *Fractures of the ɛternal condyle* were much commoner and due to ɔrce from the ground transmitted through the radius. ubitus valgus and ulnar palsy were common equelæ of inadequately treated cases. *Isolated fracɛres of the capitellum* were rare, and as they were intraɛticular there was no deformity, and the diagnosis ɛsted on excessive limitation of function and swelling f the joint. The causative force was more probably rect. In general, direct fixation inside the capsule as undesirable. If the parts could not be fixed by ɔsture or extra-articular screws, traction in flexion y a pin through the olecranon should be tried. *Partial actures of the olecranon* might be detachment of flakes fissured fractures without displacement. *Fractures the coronoid process* were occasionally caused by uscular violence, but much more often by posterior slocation. *Fractures of the radial head* might be due falls on the elbow, but were more commonly due falls on the outstretched hand. They were divided to three types: the first with loose fragments, emanding immediate operation; the second with gross eformity, usually requiring excision of the head; and ıe third a fissured fracture without much displaceent. In the commonest type, however, the fragents retained their normal position. These fractures ıould be treated as sprains and active rotation started om the beginning. This often restored a full range movement, whereas excision never gave more than per cent. *Fractures of the neck of the radius* were ıually due to indirect violence, and if correct alignent could not be obtained the radial head should be moved. *Fractures of the tubercle* were rare and the sult of muscular efforts.

Forward dislocation of the head of the radius was ıually associated with fracture of the shaft, but if ɔlated was usually the result of the radius striking rounded object on the ground. *Partial subluxations* ere not uncommon, but were hard to demonrate without a stereoscopic radiogram. *Sprain of gaments* was a clinical diagnosis and not a clearly fined injury; probably muscles were always involved well. *Tears of muscles* were due to sudden unıarded movement, and could only be distinguished om partial fractures by the X ray appearance and the sence of crepitus. *Spurs of bone* were apt to pear in the muscles of this region in advanced years ıd the snapping of one of these might cause acute calised pain. *Traumatic myositis* might follow the olonged and unaccustomed use of any muscle; the hole muscle was tender and showed soft crepitus.

Tennis Elbow.

Tennis elbow eluded classification. It occurred in tients who practised those sports and trades where e arm was suddenly jerked into full extension, while e hand grasped a large object: tennis players, r-fishers, golfers, sabre fencers, and workers with mmers. The onset was rarely sudden; a gradual he appeared in the outer side of the elbow, most arked in certain movements, and ceasing when the me ceased. A definite localised tender spot was und in the region of the external epicondyle and enching the hand was painful, but passive movement as painless. The main theories of its pathology were:) tearing of muscles; (2) periostitis; (3) tearing of psule, involving the external, lateral, or orbicular gaments; (4) arthritis of radio-humeral joint; and) Osgood's bursitis. This bursa lay immediately stal to the external epicondyle, deep to the common origin of the extensor group. Mr. Ogilvie had been unable to find this bursa or to obtain any success by Osgood's operation. All bursæ were abnormal, for they were not present at birth, and might be developed anywhere in response to excessive movement or pressure. Mr. Ogilvie believed that the commonest cause of tennis elbow was tearing of extensor muscle-fibres at their origin from bone, with periostitis sometimes. The radial extensors came into powerful action in gripping movements in tennis. In the first stage the effusion of fluid, local hyperæmia, and round-celled infiltration caused pain and tenderness and were treated by firm pressure, massage, and rest. The second stage of early repair caused pain on certain movements only, aching, and a localised tender spot. Firm pressure by a pad smeared with iodex and strapping at 135°, and active movements, constituted the best treatment. In the third stage there might be adhesions calling for a manipulation such as Mills's. Patients usually came in the second or third stages, and the treatment suitable for one stage was quite unsuitable for the other. Focal sepsis must be sought, as few traumata ran a sterile course. Focal subinfection prolonged the second stage and made adhesions more likely.

There were other types of tennis elbow, however, and symptoms which could not be referred to tearing of the extensor carpi radialis longior. Sometimes there was a true inhibition of movement, causing the patient to drop things. This resembled the sudden giving-way of the knee, and was probably due to a similar internal derangement: a nipping of synovial fringes, especially those thickened by arthritis. Mild traumatic arthritis could be produced by overuse alone—e.g., the return to a strenuous game after a season's rest. Treatment was removal of the causative fringe.

Mr. JENNER VERRALL said that internal derangement as a cause of tennis elbow had long appealed to him, and he agreed with Mr. Ogilvie's remarks about Osgood's bursa. He regarded tennis elbow as possibly a muscular rupture in some cases but more often as a combination of circulating toxins and local trauma. In seeking Osgood's bursa one often found dense fascia between the common extensor origin and the head of the radius, and the opening-up of this explained the good effect of seeking Osgood's bursa as well as of Mills's manipulation, which undoubtedly cured about a third of the cases. Strains on the inner side of the elbow were strictly comparable with those on the outer side, and were nearly all due to tension on the flexor carpi ulnaris. Carried still further, this caused displacement of the ulnar nerve which often could only be cured by shifting the nerve. The forward-dislocated head of the radius did not limit flexion but nearly always caused chronic musculospiral neuritis, and it was most important, especially in children, to get the head back into place as soon as possible. After a month or two it might become quite irreplaceable. The construction of a new orbicular ligament with fascia lata was most satisfactory. Early operation was the only possible treatment for fracture of the head of the radius. Excision of the head in a movable elbow left a very weakened elbow, but early excision of small fragments was satisfactory. Fracture of the capitellum was not rare, and operation was the only possible treatment. Fractures of the internal epicondyle were not operated on often enough and were apt to limit movement.

Mr. WATSON JONES showed slides illustrating 5000 cases of elbow injury and pointed out that elbow injuries were most common and most significant in the second decade; in 94 cases of traumatic arthritis perfect cure had been achieved in 92. The problem was not how to cure but how to cure quickly. It was curious that one method or another was often continued as a routine without accurate weekly records of the range of movement. It did not matter what treatment was used so long as progress was checked by measurement. Massage did no good; aided active movements tended to arrest recovery,

passive movements were harmful, and manipulation under anæsthesia was disastrous. We were apt to be too anxious about rest; results would improve by steering a course between rest and movement. The patient was the best judge of the amount of movement needed. Fractures of the head of the radius had a grave prognosis. The results might be improved by more radical treatment; the disability was less after excision of the head than after more conservative measures. The limitation of movement was limitation of extension, not of supination and pronation. In fracture of the neck with angulation the head should not be removed but slung in position with an artificial ligament. Fractures of the internal epicondyle could also be produced by direct injury. Ulnar palsies only resulted from indirect injury. The capsule, if pulled in with the epiphysis, dragged on the ulnar nerve and so caused palsy. Treatment was to free the nerve and, if necessary, transfer it to the front of the joint.

Mr. WHITCHURCH HOWELL said that tennis elbow was the result of bad tennis, and rarely occurred in the professional player. He reported a case of myositis ossificans in the brachialis anticus in a man who fell from his horse and was dragged by the reins, and another of a tramwayman who had had no injury save the constant jerking he sustained in climbing the tram; he had developed two loose bodies in front of the joint.

Mr. R. C. ELMSLIE recorded two cases of tennis elbow; one in his own arm. Most cases came on very gradually indeed and the toxic factor played a large part. The sufferer was the player who went on playing hard tennis at an age when many people gave it up. There were many causes other than tennis; his own might be ascribed to wrenching club-feet. Very characteristic signs were the exact situation of the tender spot over the radio-humeral joint and the pain caused by passive forced flexion of the wrist and pronation and—in more severe conditions—forced extension of the forearm. The combination of the three caused most pain. Supination of the forearm with extended wrist was also very painful. He excluded cases with arthritis from ordinary tennis elbow. His own "elbow" had been cured by removal of a molar tooth with an apical abscess. He cordially agreed that a child whose elbow had been injured would find for itself the movements that were safe and would cure itself better than any masseur could. The masseur would pretend to do a lot and really do very little.

Mr. W. H. TRETHOWAN declared that nothing showed a more constant clinical picture than tennis elbow and that the pathology was equally constant. He himself had a tennis elbow due to prawning, which involved lifting weight in extension of the forearm and wrist. Osgood's bursa was nothing more than the extension of the synovial membrane of the radio-humeral joint, and one cause of pain was compression of this pouch by the extensor carpi radialis longior. Tennis elbow was always a traumatic synovitis of the radio-humeral joint. He did not believe sepsis was ever concerned. The results of treatment depended upon the stage at which each form of treatment was applied. Protracted cases were the cases which would not rest.

Mr. ROCYN JONES said the pathology of tennis elbow was little known. The lesion was produced by a combination of supination and extension. Mills's manipulation was very valuable in selected cases where there was a pronated arm with flexed wrist and fingers. The treatment was rest, heat, and massage, and, if these failed, operation. Fissured fracture of the head of the radius was difficult to diagnose, except by X rays; there might be some tenderness and elastic swelling; little treatment was required.

Mr. PHILIP FIGDOR emphasised the importance of active movements.

The PRESIDENT said that there was a very similar pain associated with the muscles arising from the internal condyle. Some cases were relieved by a pad and strap and others by manipulation.

Mr. OGILVIE, replying, emphasised again the importance of the exteroceptive range. Ankylosis should be in the exteroceptive position; the classical position was only useful to the man who needed two hairbrushes and wanted to get both hands to his mouth at once.

SECTION OF ANÆSTHETICS.

AT a meeting of this Section on Dec. 6th, with Dr. R. E. APPERLY, the President, in the chair, a discussion on

ANÆSTHESIA IN RECTAL SURGERY

was opened by Dr. J. K. HASLER. From the anæsthetist's point of view, he said, the surgery of the rectum was particularly satisfactory. In giving a general anæsthetic his ministrations were well out of the way of the surgeon, and if a regional or local administration was needed this part of the body was well adapted for it. Apart from operation for rectal cancer, much shock was uncommon, and the anæsthetist was seldom worried by a patient being in extremis. Of the two groups of rectal operations—the abdominal and the perineal—the former were mostly for dealing with malignant disease connected with the rectum; half of them were for colostomy and the rest were abdominal resections or operations for insertion of radium into a high growth in the rectum and the associated glands. The surgeon required good abdominal relaxation so as to avoid unnecessary coils of intestine being constantly forced through the wound, and anæsthesia must be deep enough to allow of exploration of the abdomen if necessary in order to ascertain whether there were secondary deposits in the liver. Colostomy was often the precursor of a second operation, and the patient must be kept fit to undergo this in about a fortnight. A good general anæsthetic satisfied the requirements but each anæsthetist would have his own preference and should employ the one which yielded him the best results. A general anæsthetic was commonly given for the preliminary colostomy, and for the subsequent operation a spinal anæsthetic was employed in combination with some form of twilight sleep or a light general anæsthesia; but there seemed to be no reason why general anæsthesia should not be dispensed with altogether. Injection of a spinal anæsthetic between the third and fourth lumbar vertebræ caused anæsthesia well above the umbilicus and gave good abdominal relaxation. Spinal anæsthesia did not always obviate chest complications but the patients who developed chest trouble after it would probably have fared worse under general anæsthesia.

Perineal operations formed the second or large group, and here the field for anæsthetics was more varied. The three most common complaints in this region were hæmorrhoids, fissure, and fistula, and these troubles had generally caused much anxiety for a number of years before operation, so that the patients had a characteristic mental state—that of long-continued suffering in silence. Many started to resist with the onset of unconsciousness, and complete relaxation was delayed, especially if the patient was alcoholic. They had to be deeply under the anæsthetic before the operation was begun, otherwise contraction of the leg muscles made it difficult to place them in the lithotomy position, especially when the sphincter was forcibly dilated. The general anæsthetic must at first be given liberally, but this rule did not apply to pure chloroform, whose use for operations involving the anus and the rectal sphincters had been widely condemned. If chloroform anæsthesia was not deep enough when the anus was dilated there was a risk of cardiac inhibition or reflex inhibition of respiration. Yeomans, of New York, considered that chloroform had no place in rectal surgery.

The forms of local anæsthetics used for perineal erations could be classified in three groups:) local infiltration of the operation area; (2) extra- ral anæsthesia brought about by caudal block and cral block; and (3) intradural or various forms of inal anæsthesia. In America the caudal block was ten combined with trans-sacral block. At the Mayo inic intense anæsthesia was produced 10 to 15 inutes after the completion of the injection, and it as expected to last two hours. J. S. Lundy, of that nic, reported 99 per cent. of successful cases in the naller rectal operations with this method, and to 85 per cent. in cases of carcinoma of the rectum. r. Hasler did not himself expect spinal anæsthesia last longer than an hour; if an operation was kely to be prolonged, the spinal could be combined th a caudal block; this extra injection took but tle time and certainly prolonged the anæsthesia. ecent papers by Pitkin and Kelly suggested that inocain would be a useful anæsthetic for purely rineal anæsthesia. By tilting the body of the tient either up or down, according to whether the avy or the light solution had been used, the anæs- etic effect could be limited to the pelvic region. ut examination of the literature suggested the awback that there was risk in altering the patient's sition relative to the horizontal plane for at least o hours after the operation, though this risk could rhaps be reduced by using less spinocain. It was t always desirable to produce full relaxation of the hincters in cases of fistula; it was usually necessary r the surgeon to be able to feel the sphincters while erating. Local anæsthetics, especially spinal ones, laxed the sphincters too much.

Discussion.

Mr. E. T. C. MILLIGAN said that for many years it as thought that the value of an anæsthetic was hanced if it relaxed the sphincter ani; and if it d not, the surgeon proceeded to stretch the sphincter rcibly so as to expose the piles. Now, however, the les were withdrawn from the anus and exposed with ssecting forceps, which made such relaxation need- ss. But for extensive fistulæ in which the internal ening in relation to the sphincter had not been termined beforehand it was important to feel the ghtly gripping sphincters, so that an anæsthetic hich relaxed the sphincters was bad. This remark id not apply to simple fistulæ in which the relations f opening to track had been determined beforehand. e thought that both anæsthetist and surgeon should e familiar with all the possible anæsthetics for a iven operation, so that a wise choice could be made. perations for fissure, fistula, and piles were now erfect, and in choosing the anæsthetic the ideal as to banish apprehension before, pain and appre- ension during, and pain after the operation. Though audal block was ideal if it was reliable, he thought hat in practice it was uncertain. Local anæsthesia as one of the best forms of anæsthesia for hæmor- hoid operations, but many patients were appre- ensive, interpreting every movement as something hat would produce pain, and for such rapid and simple perations gas-and-oxygen anæsthesia with prelimi- ary sedative medication seemed the best means of lanking out consciousness. Low spinal or spinal næsthesia limited to sacral nerves had advantages hich made it valuable for operations on the peri- eum. It was controllable, and had none of the dis- dvantages of the higher spinal anæsthesia. Most of he bad results following spinal anæsthesia were due o improper selection of cases, and some were ascrib- ble to faulty technique. Post-operative pain bore o relation to the method of anæsthesia.

Dr. A. L. FLEMMING asked whether it was con- idered that stovaine fixed more certainly and quickly han novocain. He would have thought that the dministration of the anæsthetic with the patient in he sitting posture was dangerous. Dr. Hasler eemed to use only a small quantity of the drug. Pitkin apparently did not rely on the inclination or tilt of the patient; if he wanted a high anæsthesia he used a larger quantity of the solution.

Dr. W. HOWARD JONES said he did not know why stovaine was used so much in preference to novocain, which was much less toxic and irritating. The 10 per cent. solution of novocain had a specific gravity of 1·023, and the specific gravity of cerebro-spinal fluid was between 1·004 and 1·008. When the solution was injected into the cerebro-spinal fluid there was, opposite the point of the needle, an equal quantity of cerebro-spinal fluid, and so the specific gravity was reduced, the heavy solution becoming a lighter one. For a complete splanchnic block, 15 drachms of the 10 per cent. solution was injected between the second and third lumbar vertebræ, and the patient was then placed in the Trendelenburg position. The fluid would come to a halt at about the third dorsal segment. On going higher up there was a progressive decrease in the time the anæsthetic lasted, since the duration depended on the degree of concentration of the solution. With the new anæsthetic, percain, it was stated that spinal anæsthesia would last up to four hours, and even a solution of one-twentieth per cent. was effective. He believed it would be very valuable for rectal operations. The first case he had seen at hospital that day was a man of the navvy type who had been admitted as an "emergency" on account of perforated gastric ulcer, and was in intense pain. Dr. Jones had injected a one-twentieth solution of percain, flooding the subarachnoid space as far as the third dorsal vertebra. The pain disappeared immediately, and in ten minutes the abdomen was opened, the ulcer closed, and the abdomen was swabbed out without discomfort. For producing a complete splanchnic block 15 c.cm. were injected without withdrawing cerebro-spinal fluid and the solution would travel as high as the third or second dorsal vertebra. If cerebro-spinal fluid was withdrawn, the subsequent injection would travel higher.

Dr. C. F. HADFIELD expressed his surprise that stovaine could be caused to drop down by change of posture in the way Dr. Hasler had described. His own practice was to place the patient in the Trendelenburg position as soon as the injection had been made. He thought 45 minutes' operating time was all that could be reasonably expected of stovaine in the light form. Formerly he had used 1·0 c.cm. of a 10 per cent. solution, but now he used 0·6 c.cm., and he had noticed no reduction in the anæsthetic effect.

Dr. EVANS submitted that for hæmorrhoids and fistula nothing more than a fairly light anæsthesia was required—i.e., enough to keep the patient quiet and prevent him kicking. Given a good gas-and-oxygen anæsthesia the surgeon could do all that was required in comfort.

The PRESIDENT spoke of abdomino-perineal operations for carcinoma of the rectum, for which he sometimes had to give the anæsthetic—namely, spinal anæsthesia. At the end of the abdominal part of the operation, when putting the patient in the lithotomy position for the perineal part of it, the blood pressure, which previously had been satisfactory, fell considerably and was a cause of anxiety. Recently a surgical colleague at Middlesex Hospital had adopted the plan of doing the perineal part first—i.e., when the spinal anæsthesia was at its best—and concluding with the abdominal stage. The result had been extraordinarily good, and since doing this that surgeon had not lost a case.

Dr. HASLER briefly replied. He said that "light" and "heavy" solutions were relative terms; one contained glucose, the other did not. Both were heavier than cerebro-spinal fluid. With regard to depth of anæsthesia for these operations, he liked to have the patient well under, at the commencement especially, partly because of the general mental and physical state of the patient, partly because of the area of operation concerned. A patient who had had a spinal injection and had low blood pressure should be moved as little as possible for the hour or two following the incision.

SECTION OF OTOLOGY.

AT a meeting held on Dec. 6th the chair was taken by Mr. W. M. MOLLISON, the President, and a paper on

Radiological Diagnosis of Mastoid Disease

was read by Dr. ELSIE MANN. She described the technique adopted in examining the mastoid, and said she now used two lateral views as a routine; the prone position, although it had the advantage of showing the two mastoids on one plate, had not proved sufficiently useful to be made a standard practice. The exposure should be as short as possible when the patient was a child, and it was better to gain the child's confidence than to frighten him by using a clamp. A successful plate from a child under three was obtained more by luck than good management, and occasionally an older child would prove refractory to all persuasion, and would not keep still. Interpretation was not always easy. The mastoids were usually symmetrical but might be cellular on one side and acellular on the other. When they were cellular on both sides the cells were usually symmetrical, which was a useful thing to remember when trying to decide whether a space were an enlarged cell or an area of absorption. Superficial œdema, eczema of the meatus, and furunculosis might all cause blurring of bony detail, but in the absence of these conditions the radiologist could diagnose mastoiditis and give help which, though not infallible, was very useful.

Dr. GRAHAM HODGSON showed slides illustrating the

Diagnostic Value of X Rays of the Temporal Bone.

In one-third of the cases of otosclerosis, he said, X rays would reveal a loss of definition of the basal turn of the cochlea. In another third nothing abnormal could be seen, and in the remaining third there was some lack of definition which the radiologist could not distinguish with certainty from a normal variation. In some advanced cases the changes—which might be described as the difference between a raw grain of rice and the same grain boiled—could also be detected in the capsule of the posterior labyrinth. The extent of the changes did not seem to have much bearing on the symptoms, which perhaps depended more on the distribution than on the extent of the changes. Radiology could be of use in otosclerosis, however, in following the result of treatment and selecting the cases most likely to yield to it. In tumours and fractures the X ray was of definite value, as Dr. Hodgson's slides illustrated, and might detect a fistula in the external canal. Showing slides of mastoids, Dr. Hodgson suggested that a child might be kept momentarily quiet if the radiologist made more noise than it was making itself.

Mr. T. B. LAYTON spoke on the

Value of Radiography in Symptomless Mastoiditis.

He said there was no symptom of inflammation of diploetic tissue of the mastoid bone. All symptoms were evidence either of extension or of absorption of toxins or organisms. Radiology would detect the cases in which there were no symptoms. Any case of otitis media might actually be a mastoiditis, and if it did not quickly get well might be maintained by infection from the mastoid end quite as often as from the nasopharyngeal end. If it did not recover in three or four weeks the mastoid should be considered, and if there was any doubt the mastoid should be dealt with before the nasopharynx, or the case might become incurable by small operation. Caries was followed by sclerosis; radiography should in the future reveal the stage at which sclerosis began, probably two or three months after the onset of otitis media. Early operation gave perfect results without radical operation; after the onset of sclerosis there was less chance of getting the patient quite well. Clearing up the nasopharynx had given most unsatisfactory results in very many cases of running ears. Radiography would segregate the cases of symptomless mastoiditis, and show whether in otitis media the mastoid became inflamed and whether or not it would get well with the otitis.

Mr. T. H. JUST read a paper on the

Diagnosis of Acoustic Tumours.

Rare as these were, he said, every otologist must see them, because some patients complained at first of deafness, tinnitus, and giddiness. From the welter of sometimes contradictory findings he selected as outstanding symptoms: deafness, headache, falling or lurching, failing vision, giddiness, sensory disturbances—usually of the fifth nerve—vomiting, diplopia, paresis, and tinnitus. Cases of endothelioma and cholesteatoma of the meninges showed practically the same symptoms, due to pressure in the posterior fossa. The signs were connected with (1) the eye; (2) the cranial nerves; (3) the cerebellum and (4) the eighth nerve—i.e., (1) disturbance of vision up to complete blindness; papilloedema, contraction of the visual fields, particularly to colour; spontaneous nystagmus, and diminished or absent corneal reflex; the nystagmus had been present in all of his 33 cases; (2) diminution in sensation or power in the area of the fifth nerve; (3) falling or unsteadiness, and weakness or loss of power in the limbs; (4) middle-ear deafness and loss of function in the vestibular nerve. The simplest test for the cochlear nerve was by means of a heavy and middle fork and a noise box. To be certain of a small diminution of bone conduction was not always a scientific possibility. Mr. Just had ceased to use the rotation test, as all patients showed spontaneous nystagmus and many were spontaneously giddy. The galvanic test was rather uncertain and he preferred the cold caloric test, which produced marked giddiness, errors in pass pointing, and marked and wide nystagmus if the vestibular nerve were working at all. Only the bad ear was syringed.

Dr. W. T. GARDINER read a paper on the same subject, dealing with Edinburgh cases. His findings coincided with those of Mr. Just. Deafness was usually the first symptom. Giddiness, absence of spontaneous pointing error, and spontaneous nystagmus had been the next most common, and the nystagmus was the most useful diagnostic symptom. The cold caloric test was valuable, and had been positive in all the ten cases who had permitted it. Mr. Gardiner thought, however, that the sound ear should be syringed as well as the other. The diplopia was due to the sixth nerve only. Loss of taste and sense of smell had been recorded in a few cases. The radiogram had given great help in two cases, showing enlargement of the internal meatus. Acoustic tumours should be suspected in cases of absolute deafness and loss of vestibular function associated with spontaneous nystagmus in all directions without Rombergism or spontaneous pointing error.

Cases.

Mr. C. GILL-CAREY showed a case of objective tinnitus in which a crackling sound, not exactly synchronising with the pulse, could be heard a foot away.—Mr. O. POPPER declared that this condition was due to rhythmic contraction of the tensor tympani; he himself could produce it voluntarily.—Sir JAMES DUNDAS-GRANT, Mr. L. GRAHAM BROWN, Mr. W. S. ADAMS, and Mr. GILL-CAREY commented on the case and quoted similar ones.—Dr. D. A. IMRIE showed a case of tumour of the nervus acousticus demonstrated by radiography. The difficulties encountered by the radiologist, he said, were the depth of the petrous portion and the impossibility of producing symmetrical views of two sides when the beam was passed along the internal canals. The tumour had been diagnosed by a stereoscopic trans-orbital view, as suggested by Conte, of Turin, the beam passing through both orbits. This method gave truly symmetrical views of both petrous bones and should lead to earlier diagnosis of acoustic tumours.—Dr. T. B. JOBSON pointed out that this patient had first been seen in the ophthalmological department, at a stage when it was really too late, and the operation had to

e one of great magnitude and difficulty. Diagnosis hould rest on deafness, vestibular signs, facial aresis, and radiography; to wait for further symp-oms involved great risk.—Mr. G. H. STEELE remarked hat the case had been an obvious auditory fibroma efore operation, yet at operation the growth had been ound so deeply embedded in the cerebellum that the iagnosis had been doubted. Six weeks after the rst decompression the cerebellum had extruded the umour, but operation had failed because two large lood-vessels running across the tumour had been uptured.

Mr. E. WATSON-WILLIAMS showed skiagrams of he temporal bone. One showed extensive destruc-ion by choleastomata, and the second showed nfection in the mastoid cells in acute otitis media. Ie agreed with Mr. Layton that the mastoid was not pened early enough or often enough, but not that t should be treated before the nasopharynx. The harynx should have been treated before three weeks ad elapsed; neither end should be treated to the xclusion of the other. In his experience radiology ailed to help, and was vague in just those doubtful ases of mastoiditis where help was most needed. The otologist must rely on his clinical findings.

Mr. W. A. MILL showed a case of osteomyelitis of he temporal bone. The man had had a Schwatze peration performed for acute mastoiditis. A month ater he had suffered from swelling in the temporal egion, headache, and pain, all of which had persisted. Operation a month later had revealed granulations in he mastoid cavity, malleus, and incus, and diseased one in the squama with thickened dura.

Sir JAMES DUNDAS-GRANT showed skiagrams from a man who had fallen down and been picked up deaf. There was a suggestion of a fracture in the back of he orbit, possibly the labyrinth had been fractured by transmitted force.

Discussion on Papers and Cases.

Mr. A. R. TWEEDIE said that clinical findings must be regarded as more valuable than radiography in deciding what to do in otitis media. He would not open an antrum while a child had offensive tonsils and adenoids.

Mr. LAYTON, in reply, said that radiology was only one piece of evidence in mastoiditis, and that he found it valuable in cases where there was no other evidence. He did not believe that post-aural drainage was a valuable thing if there were no disease of bone. The only way of finding whether bone was involved or not was by radiography. Removal of tonsils which would not be removed save for a running ear never gave any good result; he would not operate on the nasopharynx while an acute infectious process was going on.

Sir JAMES DUNDAS-GRANT urged the value of the unilateral galvanic test for acoustic tumours, with the cathode on the back of the neck and the anode on the ear, and advocated his cold air apparatus.

Mr. TWEEDIE agreed that rotation was not of much value but still hoped to get something from it quantitatively. The galvanic and caloric tests depended very much on the technique. The first thing to note was whether the leaning or the nystagmus appeared first. In middle-ear cases it was possible to get a hyposensitive peripheral organ by the caloric test and a hypersensitive vestibular nerve by the galvanic test. The galvanic test result was in direct proportion to the integrity of the ganglion of the vestibular nerve. If the resistance were adjusted the patient would not suffer from the test.

Mr. S. SCOTT said his experience had differed from that of Mr. Just in that the galvanic tests had proved of great value to him; details of technique were very important.

Mr. BROUGHTON BARNES asked whether any changes had been seen in the middle ear.

Mr. JUST, in reply, said he had had no evidence of middle-ear disease in the affected ear.

SECTION OF PSYCHIATRY.

AT a meeting of this Section held on Dec. 10th, the chair was taken by the President, Sir ROBERT ARMSTRONG-JONES. Members of the Section for the Study of Diseases in Children and of the Child Guidance Society attended this meeting.

Dr. BERNARD HART opened a discussion on

THE DIFFICULT CHILD.

He defined the difficult child as one who presented obstacles to the achievement of that internal and external adaptation which constituted the aim of nurture and education. The point of view taken towards him had changed from an ethical to a physical and then to a psychological one. The difficulty had been ascribed to congenital weakness of moral fibre, diseases or defects in various organs, and lack of nervous stability, but these things never filled the whole picture, and failure of perspective must result from concentrating on them. The modern view was that the trouble was similar to that underlying functional nervous disorders, and that the difficult child was likely to become the neurotic adult. There was a failure in adaptation of the individual as a whole and not a disorder of any one system. The trouble could only be fully understood if psychological conceptions were brought to the aid of physical and chemical conceptions. The symptoms displayed by the difficult child were due to a fault in his reaction as an individual. Delinquency and behaviour anomalies were included as well as nervousness and needed treatment along the same lines.

The Child Guidance Movement was an attempt to cope with the problem along those lines. It employed a team of workers, including a psychiatrist, psychologist, and social worker, for it was essential to know much about the child, his mental and physical make-up, his home- and school-life, and the people he met in both environments. In some cases the external agencies must be modified. Team-work of this kind was always somewhat repugnant to the clinically minded physician, even when the team was welded together by the method of the conference. There was also a fear lest the social worker tail should wag the psychiatric dog, but all who had had experience of the social worker's aid would realise that this risk was well worth taking.

The Point of View of the Pœdiatrist.

Dr. HECTOR CAMERON described the difficult child as a problem in management, physical culture, and metabolic instability, subject to a vicious circle of conduct and metabolic disorder. His low fat tolerance had long been recognised; great emotional excitement or physical exertion and states of infection caused exhaustion of the slender glycogen resources of the body, or glycopenia, in which condition metabolism of fat was incompletely carried out and intermediate products appeared. In this state vasomotor pallor, amyotonia, yawning, furring of the tongue, nausea, instability of temperature curve, low muscle tone, fainting, and indefinite aches and pains were the rule. Often vomiting dominated the picture; sometimes it was absent or only occasional. In between attacks the child was full of nervous energy, often squinting or stammering, pale, troublesome, incontinent of urine, a bad sleeper, and restless. The hepatic and muscular glycogen played an important part in determining the sugar content of the blood. Opposition, irritability, apprehension, terror, loss of confidence, and loss of the power to concentrate were characteristic mental states both of the nervous child and of insulin hypoglycæmia. The metabolic disorder often expressed itself in a nervous exacerbation. An excitement, a fright, a great intake of fat or an illness might each produce a deterioration in nervous control, showing itself as a failure of concentration culminating in a confusional state; increased opposition and irritability; night terrors, enuresis, or a bout of vomiting. An attack on the metabolic

disorder should precede psychiatric attempts to adjust conduct. An antiketogenic diet, glucose at short intervals, a petrol mixture with low fat and high sugar all gave good results. There was often an exacerbation during the normal sugar shortage of the night. This might be why the child got up tired, yawning, with lines under his eyes, fussing and worrying over little things which later in the day gave him no trouble.

The Child Guidance Council.

Dr. W. MOODIE said that "child guidance" had unfortunately come to suggest interference with the parent's duties. It had acquired an arbitrary meaning: a team method of approach to the study of behaviour problems of children. Workers had found that these problems could best be approached from four aspects: the physical, the temperamental, the intellectual, and the environmental. In practice the psychiatrist usually did the first two, the psychologist the third, and the social worker investigated the history and environment. Sometimes a pædiatrist undertook the first line of approach. The ordinary practitioner, if he was willing to give the time, could obtain in his consulting room a history and description of the child's environment, but even if he visited the home he did not usually see how the child and its parents behaved towards each other on many different occasions, as the social worker could. Moreover, it demanded a great expenditure of time to sort out and arrange chronologically the confused and often inaccurate statements of the relatives; this could quite well be done by the social worker. Intelligence quotients were inaccurate, and gave only a vague idea of the child's abilities, but the trained psychologist obtained much more information than this as to the child's mental attitude towards his environment, his attack on problems, and reaction to failures, and also interpreted educational reports. Direct questions to the child about his emotions were harmful, and provided just that limelight the desire for which was the basis of so many problems. The amount of psychiatric investigation carried out at a clinic depended on the age of the child; the younger the patient the less the psychiatry. When all the reports had been collected a case conference was held to decide on treatment. To the conference were invited interested parties: teachers, doctors, social workers, and students. Conferences were useful for instructional purposes. The psychiatrist delegated to suitable workers the appropriate branches of treatment. The social worker tried to modify the home environment and, difficult as this was, achieved success often enough to make it worth while. Trained workers soon became able to estimate the chances of success. The psychologist would help the child over any educational difficulty by special tutoring. Further conferences were held from time to time to discuss progress. The social worker's visit was a friendly one and did not give the impression of making inquiries. She could be used to produce an experimental observation of temperamental reactions—an object which had not been achieved by any of the many methods of psychological investigation devised for the purpose. Although cumbersome and costly, the team method was not one lightly to be set aside, for it was a valuable experimental and therapeutic weapon.

Dr. EMANUEL MILLER confined himself to a group of children in which there was no demonstrable physical disorder which could reasonably be regarded as primary, although not denying the metabolic basis of conduct disorders. He briefly described the work at the Jewish Child Guidance Clinic. The great difficulty, he said, was the relating of the disturbance to the environmental error from which it was supposed to have arisen. A behaviour disorder often corresponded with an error in the home or school, but the mere existence of such an error was not enough to account for the disorder. The family, though socially a unit, was largely a discordant collection of individuals pulling in different directions. The complicated dynamic perplexity of the situation on both sides was important. A child might steal from one parent and not from the other, or steal one class of objects only. It was difficult to believe that these phenomena were poised on a carbon atom. Circumcision or the weaning of the baby might cure a child in the most lurid home. The social situation was a stimulus to the child, but what happened was the reaction to a situation that had gone before, and the removal of the stimulus did not necessarily cure. However carefully parents avoided favouritism, "foundling" phantasies or feelings of "not being wanted" would often arise from such things as position in family or physical peculiarities. Nothing could more readily stimulate disorders of behaviour. To differentiate between cases which were within and those which were without the realm of social correction was difficult. If the reactions were infantile the condition was probably a response to something that had gone before, by the mechanism of the conditioned reflex. Magical and symbolic gestures should be recognised and differentiated from habit spasm and rheumatic movements.

Lay Psychological Study.

Miss FILDES (Child Guidance Council) said that the problem must be studied from the point of view of practical expediency, and it was waste of the doctor's time to do much that was necessary if the difficult child was to be adjusted in some circumstances. One direction in which difficulty might lie was the intellectual capacity, and this field belonged primarily to the lay psychologist trained in the investigation of intellectual and emotional processes. Intelligence quotients were useful and very much abused; they were most abused by people who took short cuts to them and failed to analyse the material from which they were derived. A child subnormal or supernormal in general intelligence found normal adaptation extremely difficult, and was apt to develop superadded emotional situations. Special abilities and disabilities also went to make up problems. Here again the lay psychologist could be of great use. Inability to speak or read could be analysed and dealt with by the trained layman in a team; he could also analyse the inherent and underlying temperamental factors underlying the child's behaviour. Much of the investigation was carried out by observing the way in which different children reacted to standard tasks under standard conditions; this revealed many general traits which might be the cause of the behaviour difficulty. The team psychologist could also investigate and deal with school problems.

The PRESIDENT spoke of the difficulty of getting the parents to admit that backward children were in any way abnormal, and of the difference between standards of behaviour in different strata of society. Extreme types of difficult child, he said, were easy to recognise, but there was a large, intermediate group which was difficult to recognise and treat; they were human butterflies, easily led, and hard to interest. The parents must not be mere spectators of official interference.

Encephalitis and Dyspituitarism: the Value of Bulbocapnine.

Dr. E. R. HILL spoke of chronic epidemic encephalitis and non-encephalitic dyspituitarism, conditions characterised by crude and uncontrollable behaviour responses, exaggerations of the crude outbursts seen in normal children. McDougall's theory of instinct and emotion explained these cases satisfactorily. The optic thalamus underwent an exaggeration of its functions in these cases. Bulbocapnine controlled the aberrant behaviour for several hours without any other apparent effect. Dr. Hill quoted a typical case to illustrate the action of the drug. Patients became quiet and normal within ten minutes of a forcible injection of the alkaloid. The dose was followed by a light somnolence; there was some evidence that this was natural sleep, not comparable with the usual narcosis after a drug. There were no toxic or cumu-

lative effects, and tolerance was very slowly established, if at all. The patients relapsed when the drug was discontinued.

Behaviour disorders might occur in three types of dyspituitarism: (1) patients with increased activity of the anterior lobe, and a tendency to gigantism; (2) those with diminished activity of the posterior lobe and the dystrophia adiposo-genitalis syndrome; (3) mixed types. These disturbances were congenital, but formed a suggestive link between the mental and physical aspects of emotion.

Discussion.

Dr. D. W. WINNICOTT said that the scientific approach to the difficult child must come from a study of the child itself, whose unconscious had very great power over his life, and was not always dealt with sufficiently. All the dreadful things seen in the post-encephalitic child were present in the normal child, but controlled by the ego. Any approach which did not include the unconscious of the child was unscientific.

Miss MARY CHADWICK said there seemed to be excellent equipment for diagnosis but little for treatment. Explaining repressed tendencies would not cure anyone. Questioning a child about its emotions would not give much response. Something must be done to release its emotions and phantasies. One German clinic treated the parents when their neurosis was held to lie at the root of the child's trouble.

Dr. N. H. BURKE analysed 30 case-sheets from the Jewish clinic to illustrate methods of treatment. Home had been wrong in 23 cases; the mind in 24; the school in 7; and the bodily health in 14. Home troubles included parental disharmony or neurosis and injudicious handling; or minor difficulties, such as sleeping accommodation. In a few cases tonsils and adenoids had to come out; there were rheumatisms and debilities, a few heart cases, and a case of tuberculous joints. There had been mental dullness in a few cases; two had been defective, and one excessively intelligent. All had had various degrees of anxiety, fear and neurosis. In two cases nothing could be done with the parents, but partial adjustment had been obtained in 24 and good results in 4. Some cases needed a residential or defective school, and removal from impossible homes; others needed holidays from home—partly for diagnosis, and partly to give the mother a rest; some ought to go to better schools; others were benefited by adjustment of sleeping arrangements, admission to scout or girl guide troops, or psychotherapy. The cinema had only once appeared to have any influence.

Dr. J. D. REES said very few people in this country were doing serious analyses of children, and those who had done it in Vienna were giving it up. Doctors doing child guidance must have the analytical point of view or "environmental treatment" would be "woolly."

Dr. MARGARET LOWENFELD said that removal to a more favourable environment might improve the child, but on return he would react to the same difficulty in the same way. The child who could not deal with a difficult parent would fail later in life to deal with a difficult employer. The only method of treatment was to provide a system of play by which children could build their phantasies and slowly come to understand the reasons for their own behaviour. The child would build within itself a world which expressed its need. The emotional difficulties of childhood were associated with biochemical and physical disturbances, particularly of posture. The release given by the phantasy method was correlated with a change in the biochemical and physical picture. The problem could be approached by either path: physical or emotional.

Dr. HART, in reply, emphasised that we could not afford to neglect or be intolerant of any one of the facets of the problem.

Reviews and Notices of Books.

PSYCHOLOGY.

An Introduction to Individual Psychology. By ALICE RAVEN. Cambridge: W. Heffer and Sons, Ltd. 1929. Pp. 145. 3*s.* 6*d.*

THE title of this book, though more or less accurate in describing its thesis, is somewhat misleading in these days, when the term individual psychology has become synonymous with particular views expressed by Dr. Alfred Adler. But that is scarcely the business of the general reader, who can let the adherents themselves defend the pedestal of the idol. The book is written in a clear style, and is illustrated by a pleasant cultural breadth, but its eclecticism is a little dangerous. For example, while endorsing the very partially dynamic psychology of W. McDougall as regards the instincts and their related emotions, the author accepts fully the foundation principles of Freud's psychopathology, the power psychology of Adler, and the type psychology of Jung. Treating each system superficially, and gleaning what she feels to be most useful, she constructs a fairly coherent system of psychology. But careful analysis of her origins will bring out the glaring inconsistencies of this eclectic method. However, the very readable analyses of the plays of Æschylus, and of the character of Meleager in Swinburne's Atalanta, makes amends for he offences against established systems and the lack of logical coherence in her philosophy. Those who are familiar with the schools of thought from which it has been evolved will find this little book an interesting study.

PHYSICAL THERAPEUTIC TECHNIC.

By FRANK BUTLER GRANGER, A.B., M.D., Director of Physiotherapy, United States Army. London: W. B. Saunders Company. 1929. Pp. 417. 30*s.*

On Prescribing Physical Treatment. By MATTHEW B. RAY, D.S.O., M.D. Edin., Physician to the St. Marylebone General Dispensary. London: William Heinemann, Ltd. 1929. Pp. 179. 10*s.* 6*d.*

Dr. Granger's book is intended for the general practitioner who wishes to apply physical treatment only occasionally. It is chiefly devoted to electrical methods, and hydrotherapy and massage are passed over somewhat sketchily. The first part of the book is encumbered with elementary theoretical matter which the physician with any aptitude for the use of electricity will not need, but the last 17 chapters describe in close detail the treatment of various pathological conditions and should be helpful. Two useful features are Dr. F. A. Davis's synopsis of physiotherapeutic methods, a tabular description of the chief devices in use to-day, and the chapter on a hospital department of physical therapy, which suggests a basis for the initial foundation of a physical treatment branch, with lists of personnel and apparatus. The work is copiously illustrated, but would have been improved by a more careful selection of the pictures. It suffers from the common fault of containing a large number both of manufacturers' woodcuts, and of photographs of treatment which do not teach anything in particular.

Dr. M. B. Ray in his smaller book places balneotherapy in the foreground. He deals very little with theory, and arranges his material according to method, giving the indications for each kind of treatment as he describes it. This presentation has the defect that the practitioner who wishes to treat a certain condition must turn up several places in the book and collate the information. In many cases the descriptions have been curtailed to avoid a repetition which would have been useful, and the index is unfortunately not complete enough to support this method of arrangement. Nevertheless, this short text-book of medical hydrology and, to a lesser degree, of electrotherapy and other physical methods, is com-

comprehensive and crisp. Dr. Ray writes incisively and wastes no words, and his intelligent paragraphing, frequent side-headings, and individual page headings make the book easy to read.

SKIN DISEASES.

Grundriss der Arzneimittellehre für die Behandlung von Hautkrankheiten. By Dr. K. FÜRST, Frankfurt a/M. Leipzig: Georg Thieme. 1929. Pp. 144. M.6.

THIS small manual, which deals concisely with the external remedies in common use for the treatment of skin diseases, will be much appreciated by the thoughtful and scientific therapeutist. The author, formerly a pupil of the Herxheimer school at Frankfurt, wisely confines himself to a description of only 28 of what may be called the fundamental therapeutic elements that have withstood the test of 50 and more years of dermatological practice. They are arranged in alphabetical order, from arsenic to zinc, and each substance is considered from the aspects of its medical history, its chemical formula and attributes, its pharmacological actions, its therapeutic indications and modes of applying, and finally its toxic effects (if any) and its contra-indications. This methodical arrangement is conscientiously adhered to throughout, and the result is easily comprehended and memorised.

The work will, however, be found most useful as a book of reference. The classical formulæ for arsenic pills, lead plaster, and boric ointment, and the antidotes for cases of poisoning from the use of any of them, could not have been collected with more care or more concisely described. The intending purchaser will do well to note that the book contains no reference to any of the complicated modern remedies which Ehrlich and his school have introduced. There is no mention of salvarsan. There is an appendix of the literature of each medicament, and the index deals not only with these but includes also the diseases for which they are indicated. The work therefore serves both a pharmacological and therapeutic purpose.

MODERN METHODS OF TREATMENT.

Second edition. By LOGAN CLENDENING, M.D., Associate Professor of Medicine of the University of Kansas; Attending Physician, Kansas City General Hospital. London: Henry Kimpton. Pp. 815. 45*s*.

THE efforts being made to rescue the practice of therapeutics from the empirical methods of the past and to establish it on firm physiological and pathological principles are bearing fruit, but we are still much in the transition stage. Authors of text-books on therapeutics have to compromise between a pure exposition of principles on the one hand and a bald and dogmatic statement of methods on the other. Dr. Clendening attacks the problem with a decided modern bias which increases the value of his book as an impartial survey of present-day views on treatment, but is rather a disadvantage if an index of therapeutics for rapid reference is desired. A profound respect for the work of the pioneers and an extensive knowledge of more recent research lead him at times to submerge his own personality in a welter of rival opinions and conflicting theories. The passages in which he gives his own opinions are written in a vigorous and entertaining style, and indicate a wide clinical experience and a sound and conservative judgment.

The book, which deals only with medical treatment and omits all branches of surgery and diseases of the skin, is divided into two parts. The first deals with the methods used in therapeutics, and consists of chapters on drugs, sera and vaccines, gland extracts, dietetics, hydrotherapy, psychotherapy, and miscellaneous procedures. In two short chapters on radiotherapy and massage an attempt is made to describe the elements of technique in these very special subjects. In the chapter dealing with drugs the various remedies are arranged in groups according to their action—a method having certain advantages but apt to be confusing for such widely useful substances as the iodides. Twenty-two pages are devoted to digitalis, but the author holds that in practice "the only sensible way to exhibit digitalis is to return to the method of Withering."

The second part of the book takes the form of an index of treatment and the various diseases are again arranged in groups: diseases of metabolism, diseases of the kidney, and so forth. In both parts of the book a fairly extensive bibliography is provided at the end of each chapter, mainly compiled from American publications. A rather serious fault is the lack of cross references in the text between the two parts of the book. Often mention is made in the second part of methods which are recommended in the first. For instance, in the section on dietetics the Minot-Murphy diet is described in detail; but no reference to this is made in the directions for the treatment of pernicious anæmia, though the method is briefly alluded to and a number of recipes are given. In a volume arranged on this principle a complete system of cross references is very necessary, and its omission is not covered by the excellent index.

Dr. Clendening deserves praise for the admirably compact and lucid way in which he summarises modern work; the first part of his work is enriched by well-chosen quotations from original sources.

ELEMENTARY ANATOMY AND PHYSIOLOGY FOR NURSES.

By P. M. LODGE. London: J. and A. Churchill. 1929. Pp. 82. 3*s*. 6*d*.

THIS little book, based on lectures given at Birmingham to probationers, seems to us to be an exceedingly suitable work for the purpose. It is simply and clearly expressed and not burdened with a mass of wearisome (because misunderstood) detail, like so many of the manuals for nurses. It is calculated to give the probationer—and perhaps her senior colleague—a good and useful idea of the main structures and activities of the body. Its general value is not appreciably lessened by a few slips which can easily be corrected in a future issue.

THOSE TEETH OF YOURS.

By J. MENZIES CAMPBELL, L.D.S., D.D.S., F.R.S.E. London: William Heinemann (Medical Books), Ltd. 1929. Pp. 141. 3*s*. 6*d*.

THIS book is described as a popular guide to the teeth. It well fulfils this description and is an excellent example of a book suitable for the layman. Books on medical subjects intended for a lay audience fall into two categories—the brief, elementary manual couched in simple language which is intended for the personal guidance of those who read it, and the more advanced book suitable for teachers or those of more than average technical knowledge. This book is an example of the last-named type. It covers a wide range and the author supplies more than a practical guide to dental hygiene; he has included an interesting note on the historical side of dentistry. In discussing the treatment of dental disease Mr. Campbell goes into such questions as the different ways of filling teeth, anæsthesia, the various forms of dentures, and the advantages of gold and vulcanite. This is done not with the idea of usurping the province of the dentist but in order to give the reader some idea of the scope of his work. A diligent reader of this book might prove a somewhat captious patient if his professional attendant adopted a procedure not in accordance with Mr. Campbell's views, but on the whole a patient not wholly ignorant of the technical side of dentistry is more likely to coöperate intelligently in any treatment. Mr. Campbell has managed to pack much information into a little over 100 pages. Some of it will be new to those many medical men who have had no special experience in dental work, and they will find it highly profitable to familiarise themselves with the mechanical problems at issue and how they are solved.

THE LANCET.

LONDON: SATURDAY, DECEMBER 14, 1927.

SOMNAMBULISM AS A DEFENCE.

THE trial of MAGGIE ALEXANDER at the Hampshire Assizes at the end of last month was noteworthy for the unusual defence of somnambulism as an answer to a charge of murder. There was definite evidence that the accused sometimes walked in her sleep; there was also strong evidence that she had been in a state of acute mental distress and despondency. It is interesting to observe the attitude of the criminal law towards these two conditions. Do both of them amount to legal insanity, or were they possibly alternative defences?

Briefly the story told at the trial amounted to this: the accused had been told by her parents to break off her association with a man with whom she had become infatuated; unless she did so, they said, the home would be broken up, she would have to find a permanent situation, and her little boy would have to go into an institution. After she left home to go to her work next morning, the boy was found lying on the bed with gaping wounds in his throat; a blood-stained razor was discovered in the room. Asked by her mother why she had killed the child, the accused said she thought he would be better off. It was understood that four years ago she was jilted by a young man a few days before the date fixed for her wedding. The crux of the case was the mental state of the accused at the moment when she killed (as the defence did not dispute she did) her child; the observations of Mr. Justice CHARLES on this point will be mentioned later. Important evidence was given by Dr. WATSON, senior medical officer of Brixton Prison. He agreed, in answer to defendant's counsel, that it was possible that the killing occurred in a condition of somnambulism without the woman remembering or knowing anything about it. He had not personally met such a case nor read of one; he would not call it impossible but he would say it was improbable. He had had two long interviews with the accused in the prison and had formed the opinion that she was not insane. From her medical history he thought she was a somnambulist; he believed her statement that she had no recollection of committing the act, but this might be due to the suppression in the mind of a distasteful act—a very common feature in such cases. In answer to the judge, Dr. WATSON said that a woman walking in her sleep would not have her mind consciously functioning; although in a medical sense she might not be insane, she would not know the nature and quality of the act she was committing nor would she know that the act was wrong. Mr. Justice CHARLES, a judge of strong common sense and considerable experience in criminal law, left the matter to the jury in the following way. If the woman was so distraught that she did not know what she was doing, he failed to see how she could be guilty. If, on the other hand, she killed her child simply because she was miserable, in a fit of spleen or disappointment, or because she thought the boy was going to be taken away from her, then she did it knowing that she was doing it and must not do it, and in that case the jury must find her guilty. If they accepted the suggestion—and it was rather more than a suggestion—that the accused was a somnambulist, that she committed this act in a state of somnambulism and therefore did not know what she was doing, that she did not appreciate the nature and quality of the act, that she did not know she was doing it at all because of this somnambulistic state from which she unquestionably suffered, then their duty would be to find that she was guilty but insane. The judge added that, if they had any honest doubt whether the killing were done deliberately, intently and consciously, or whether it was done under the influence of somnambulism, then the prisoner was entitled to the benefit of it. The jury, after a brief absence from court, returned a verdict of guilty but insane.

The case gives rise to two comments. First, the state of somnambulism is not a state of insanity. A sleep-walker is not insane either in a medical or a popular sense. It is not the act per se which the judge and jury must consider, but the state of mind which prompts, and manifests itself in, the act. A sleep-walker is not to be punished for an act done in sleep. It is a difficulty of MAGGIE ALEXANDER'S case, so far as the available reports of it go, that we do not know whether the jury thought she killed the boy while she was awake but in a state of mental instability, or whether she killed him while in her sleep. The second comment arises over the ridiculous formula "guilty but insane," to which the law still clings though the Atkin Committee on Insanity and Crime condemned it six years ago. "Guilty" connotes criminality; insanity negatives the existence of the criminal mind. A finding of insanity is an acquittal. The legal questions of insanity and crime are complicated enough without perpetuating a form of verdict which is illogical and a fallacy. Is there any hope that in the impending reform of the law of lunacy a brief clause can be inserted to remove this unnecessary element of confusion?

INFECTION BY FOMITES.

IN the course of a serious discussion a medical officer of health of considerable standing said he had never been able to trace the origin of a single case of scarlet fever. Although this statement obviously needs qualification as regards secondary cases and return cases, and those occurring in milk-spread epidemics, it may be taken to represent the experience generally of people actively engaged in public health work. What is true of scarlet fever is true of many of the cases of other infectious diseases—certainly of those met with in this country. We know that missed cases and carriers are often responsible for spreading infection but informed opinion wavers over the importance of fomites—just as uninformed opinion has always wavered over the probable meaning of this peculiar word At present it is the fashion not to lay much emphasis on the rôle of infected articles, but it must be confessed that the grounds for disregarding it are not abundant. That fomites *can* spread infectious disease has been proved over and over again; that clothing and especially underclothing and bed linen—articles which come into the closest possible contact with the skin—are able to maintain viruses in activity, has been demonstrated by numerous observers. In a classical report published in 1886, Dr. H. F. PARSONS quoted the experience of medical officers in various parts of the country where woollen rags and mixed woollen and cotton rags were used in the manufacture of shoddy,

rag-flock, and similar substances. In 1880 Mr. GREENWOOD, the medical officer of health of Ossett, in Yorkshire, had attributed a case of small-pox to infection from rags which the patient was sorting. Dr. GOLDIE, medical officer for Leeds, had given similar instances; in Gloucestershire the source of small-pox among women at the shoddy mills at Chalford and Brinscombe in the Stroud Valley was thought to be rags. Medical literature yielded many other descriptions of outbreaks of small-pox among rag-sorters at paper mills in different parts of the country, traced to the use of calico rags, evidently derived from underclothing and bed sheets. The mills making the best writing-papers from white rags were especially affected, and it is noteworthy that rags used for this purpose are cut up by hand. Since then there have been so many instances of small-pox being spread by fomites that belief in this method of spread is now general. The recent Hendon outbreak showed that laundry workers are in danger from infected garments, and we have plenty of evidence that the virus of small-pox can survive for considerable periods.

Reading into PARSONS'S 1886 report the new knowledge that typhus fever is lice-borne we are fully prepared to believe in his fatal case of typhus contracted by a rag-sorter from rags. MURCHISON had earlier observed that laundry-women are especially liable to contract this disease without direct communication with the sick, and text-book writers had accepted the view that clothes and bedding may become vehicles for the transmission of typhus. We now know that lice infected with virus of typhus can survive only for a limited period without getting food in the form of blood, and in certain other diseases there are factors which limit the danger of infection. Thus when a serious invasion of this country by cholera was feared about 1890, the Local Government Board made regulations requiring the disinfection of imported rags; but according to present opinion any such danger would be minimised by the facts that the cholera vibrio is readily destroyed by drying and is easily crowded out by saprophytic micro-organisms, so that contamination must be recent to be effective. Typhoid fever, on the other hand, may be contracted by handling clothes of patients which were stained with fæces or urine quite a long time ago. PARSONS was further able to record four cases of blood poisoning among agricultural labourers due to the handling of infected waste from rags which were spread on the land as manure, and evidence is available on the spread of scabies by rags.

For many years the Government of South Africa have required that all second-hand clothing and rags should be adequately disinfected before admission into the country, and lately the administrative arrangements have been tightened up. In South Africa there is a considerable trade in second-hand clothes; the natives coming into towns and undertaking industrial occupation resort to such European clothing as can be obtained at a price within their means. Doubtless the medical advisers of the Government have been right to ensure disinfection to avoid any spread of small-pox and other diseases in a semi-civilised community where they would be difficult to control, but recently similar regulations have been enacted in a country where the same conditions do not apply—namely, the Irish Free State. When, a week or two ago, a question was asked in the British Parliament concerning the need for disinfecting imported second-hand clothing, the official reply indicated that the precaution was held unnecessary. This answer seems to be based on the considerations that most of the small-pox present in this country is of the mild type and due to the spread of infection from case to case, that recent outbreaks of small-pox imported from abroad have been attributable to definite cases of the disease, and that of late years no instance of small-pox due to imported infected second-hand clothing has been traced nor has this source given cause for suspicion. In these circumstances it is considered inadvisable to burden importers with the trouble and expense of disinfection.

THE CENTRAL BUREAU OF HOSPITAL INFORMATION.

THE origin of the Central Bureau of Hospital Information is of historic interest. It will be remembered that in 1914 a Hospital Economy Committee was set up by the War Office as a check on expenditure in the hastily improvised institutions under the control of persons inexperienced in administration. Remarkable differences in the consumption, especially of two articles, tea and soap, were observed in the various institutions visited; similar observations were made with regard to dressings, drugs, and articles of food, and soon it was possible to demolish the argument which assumes that because hospitals deal with patients whose requirements differ greatly, it is impracticable to establish standards of consumption. The Hospital Economy Committee proved up to the hilt that, without reliable relevant figures, an administrator cannot exercise effective control over his institution, but is at the mercy of his subordinates. Eventually all must bow down to returns which show with remorseless accuracy the expenditure of material or money on the performance of some unit operation, whether that be the supplying of bread to 100 persons for one day or of soap for the cleansing of 1000 articles. The close contact established between the Economy Committee and the voluntary hospitals during the war was in danger of dissolution on the declaration of peace and the gradual demobilisation of the military establishments. It was, therefore, fortunate that the Joint Council of the Order of St. John and the British Red Cross Society provided a bridge, and by the establishment of a Hospital Services Department kept available much that had been learnt during the war. This department at once took up the task of surveying the work and finances to the voluntary provincial hospitals, giving statistical information in a report published each year. The preparation of this provincial report naturally established a certain degree of contact between the individual hospital and a central body, and a good deal of imformation of a useful administrative character was collected. It was not, however, until a junction was effected between the Joint Council and the British Hospitals Association that the bureau of information could be considered to rest upon a firm foundation. This was provided in 1927, and the Central Bureau of Hospital Information now carries out its work on the authority of the hospitals themselves. This is, of course, a most important point, for in order to be successful it is essential that a centre should enjoy the confidence and the goodwill of the units that surround it. In addition to the publication of its annual report, the Bureau undertakes inquiries on the request of individual hospitals. It depends on the importance of the subject whether an inquiry results in a memorandum issued to all hospitals or is confined to a smaller number. The work of the Bureau is growing each month, and there will shortly be attached to it a hospital library where books and plans may be consulted. In short, the Bureau aims at becoming the intelligence department of the whole hospital system of Great Britain. To this end it is anxious to secure the goodwill and help of all foreign and international associations concerned

with hospital administration. We trust that the publicity accorded to its efforts in an international contemporary will achieve this result, for the story of the Bureau is fully told in the last issue of the *World's Health* by Mr. R. H. P. Orde, hon. secretary of the British Hospitals Association.

Annotations.

"Ne quid nimis."

AN UNSOLVED PROBLEM.

AT five years of age one-quarter of the children entering school are in need of medical attention according to the Chief Medical Officer of the Board of Education, who devotes several pages of his annual report[1] to what he calls the problem of the nurture and upbringing of the pre-school child. This problem, we are told, remains unsolved in spite of the 2776 infant welfare centres and an army of health visitors. The Maternity and Child Welfare Act of 1918 has done much for the child under one year, but the arrangements are almost wholly undeveloped for those aged 2 to 5, or what is known as the pre-school group. The result of the lack of provision for this group is to burden the school medical service financially and administratively with the physical and mental defects and impairment of an earlier age, to put the clock back for all the benefit won in the infant welfare centres, and to prejudice both the health and the education of the children as a whole. At present in England and Wales there are 2,000,000 children in this group. A large number, some 165,000, are in attendance at elementary schools where special provision of a limited character may or may not be made for them. Twenty-eight nursery schools are in existence accommodating about 1600 children, and there are 98 day nurseries which admit children from one month upwards. Altogether the special provision for these 2,000,000 children is almost negligible. What is needed now, and urgently needed, is the application of some approved method, an application which can only be effective if it is general or even universal. "If," says Sir George Newman, "we give the child up to five at least as good a chance of physical health as the school child obtains, the result will be sure." And he goes on to say: "It is as certain as the law of cause and effect that whenever and wherever we safeguard early childhood—by wise mothering, by good home conditions, by appropriate child nursing, by child welfare centres, by nursery schools—then and there we get improved physical conditions in childhood."

Wise mothering we are doing our best to obtain through maternity and child welfare services which are also responsible for infant welfare centres. Home conditions are being improved slowly but surely by housing and town-planning schemes. Child nursing has been demonstrated by Dame Janet Campbell in her recent report on infantile mortality to be the next important step in the child welfare campaign, only the nursery school lags behind waiting for more forceful encouragement from headquarters. Undoubtedly the extension of nursery school provision will do much to solve the problem of the care of the pre-school child. The nursery school is an evolutionary advance on the day nursery, whose original function of "minding" the children of the mother who went out to work has settled into two divisions: the care of the infant from 1 month and the care of older children from 2 onwards. It is now found that although the child under 2 can be adequately cared for in a day nursery, the child of 2 or over requires more than nursing or "minding." It is out of this idea that the nursery school has evolved. Its function is concentrated on the general nurture of the child physically and mentally from the age of 2 upwards, guiding natural instincts into correct habits and associations, encouraging efforts at reasoning, discrimination, and coördination—in fact, helping the child along the path of self-education and of independence by means of careful and skilled guidance at the hands of teachers specially trained for the work.

Such a system of hygienic and educational care for the pre-school child is naturally simpler to devise for an urban than for a rural area as is indicated in the report, but now that educational provision for rural children from 11 upwards is to be centralised in special areas it ought to be possible to organise in villages and small towns what might be called health and education centres to include the infant welfare centre, the nursery, and the primary school for children up to 11 years of age. As far back as 1908 a consultative committee of the Board of Education issued a report in which they arrived at the conclusion that the best place for children whose home conditions were unsatisfactory was the nursery school. Referring to this report Sir George Newman says: "In our own day we have at least comprehended the problem." Alas, it is a far cry now to 1908, and very many, indeed millions of 5-year-old children, healthy and diseased, have passed the portals of the elementary schools since then. The problem remains unsolved. It is still, where 2,000,000 children are concerned, one of the most important and urgent of public medical problems. We understand that 15 new nursery schools have been sanctioned, which brings the number up to 43. Forty-three schools, each accommodating 100–200 children, is but a drop in the ocean.

[1] H.M. Stationery Office. 1s. See also THE LANCET, Nov. 30th, p. 1151.

A SURVEY OF EPIDEMIC ENCEPHALITIS.

THE Commission organised and financed by Dr. William John Matheson of New York for the study of epidemic encephalitis has issued the first instalment of its report.[1] The Commission has considered the first essential to be a complete survey of the whole subject as it is known to-day. Such a survey of a disease, which though recent in appearance has become world-wide in its spread, is in itself no light undertaking, and it is evident that the Commission has set about its task with breadth of outlook and a characteristic thoroughness. Dr. Josephine B. Neal, in addition to obtaining all the information available from contemporary literature, has made an extended tour of this country and of those parts of Europe in which the earlier outbreaks of the disease were observed, interviewing personally those who have had large experience of the disease. The general summary of ætiology presents in clear and concise language the various stages through which the pathological investigations of different schools have passed during these 10 years. Complete success, it is evident, has not yet been achieved, but it must not be forgotten that during the last few years there has been an increasing difficulty in obtaining material for investigation from acute cases.

The long chapter on epidemiology, with its vast amount of statistical information, will, we think, prove to be the most useful section of the survey. It comes as rather a surprise to find that the total number of cases known to have occurred in England and Wales exceeds those known to have occurred in any other country in the world by a very large margin of 5000. The feeling cannot be repressed that this may be the result of notification rather than of incidence. The résumé of the various methods of treatment tried in different countries at different times reveals the meagre therapeutic importance of what has yet been achieved and gives point to the intention of the Commission to study for itself the treatment of 400 patients over a period of two years

[1] Epidemic Encephalitis: Ætiology, Epidemiology, Treatment Report of a Survey by the Matheson Commission. New York: Columbia University Press. 1929. $3.00.

with adequate controls. The bibliography contains something like 5000 references—more than one paper per day for 10 years—an output which is the measure of the interest which the disease has excited wherever it has appeared. For collecting and codifying this information in such a pleasant and convenient format the English-speaking world owes a debt to the Matheson Commission.

OVARIAN GRAFTS.

THE study of organ transplantation has opened up a wide field of surgical research, but the results so far obtained have been disappointing from a therapeutic point of view. For some considerable time now attempts have been made to transplant the sex glands, especially the ovaries, for there are a number of clinical conditions in which this form of treatment would appear to be indicated. Opinion is more or less unanimous that heterografting, transplantation from one individual to another of a different species, is a failure. G. Schoene, who published a monograph on this question in 1912, concluded that this was to some extent due to too great divergencies in the metabolism of the two species. No real advance has been made in recent years, and it may be concluded that heterotransplantation has not justified its use in human surgery. The therapeutic future of transplantation so far as the ovary is concerned would seem to lie in the homograft—that is, transplantation from one individual to another of the same species. Up to the present, however, experiments in animals have been attended with greater success than those in human beings. I. Kross[1] in 1925 performed transplantation of immature rat ovaries into sexually mature castrated rats, observing the results for periods up to 9½ months. These grafts survived in the castrated animals far longer than in non-castrated controls, and Kross attributed his success to the use of immature ovaries in which the potentialities of growth were high. In the human subject homotransplantation has been carried out in several series of cases, notably those reported by Lesnoi, Magnani, Perezzi, Schultze, and Schreiner,[2] but with varying results. V. Pettinari, in a recent thesis (Paris 1928), reviewed the present position and in addition reported results of a number of grafts on his own cases. In his opinion, only occasional results can be expected from homografts, though he thinks that the method is worthy of a trial in certain cases of infantilism with hypoplasia of the genitalia and other cases of this kind in which ordinary therapeutic measures have failed. He lays great stress on the individuals being of the same blood grouping and in endocrine equilibrium. The operation may apparently be carried out without much surgical risk, but its results are not very encouraging. With regard to auto-transplantation—that is, removal of the ovary to some other part of the body of the same individual—there is almost general agreement as to its field of usefulness in young women of sexual maturity in whom adnexal disease has necessitated bilateral oöphorectomy. The symptoms of the artificial climacteric can thereby be prevented or delayed, and, if the uterus is retained, menstruation generally becomes re-established and continues regularly for a few years. A large number of successfully treated cases have been described by Unterberger, Cramer, Blair Bell, Sippel,[3] and, recently, by C. C. Norris and C. A. Behney.[4] The latter consider that the life of the auto-transplanted ovary is probably not more than two or three years and in this they are in agreement with the majority. In their group of cases most of the grafts, which were made into the rectus muscle, took and the operation was practically without mortality. The grafts occasionally became tender for a day or two each month, but rarely gave rise to serious trouble.

[1] Amer. Jour. Obst. and Gyn., 1925, ix., 628.

[2] Lesnoi, S.: Russk. Klin., 1927, viii., 72; Magnani, L.: Riv. Ital. da Gineiol, 1927, vi., 33; Perezzi, P.: Atti d.v. Accad. d. Fis. in Siena, 1927, ii., 339; Schultze, G. K. F.: Zentralbl. f. Gynäk., 1928, lii., 29; Schreiner, R.: Deutsch. med. Wchnschr., 1927, liii., 2084.

[3] Unterberger, F.: Arch. f. Gynäk., 1918, cx., 173; Cramer, H.: Deutsche med. Wchnschr., 1919, xlv., 475; Bell, W. Blair: Brit. Med. Jour., 1918, i., 619; Sippel, P.: Arch. f. Gynäk., 1923, cxviii., 445.

[4] Surg., Gyn., and Obst., November, 1929, p. 642.

THE TREATMENT OF SYPHILIS.

MANY discussions on the treatment of syphilis have taken place in the United States recently and it is clear that the questions which still exercise the minds of practitioners are (1) what constitutes a complete cure, and (2) what methods are available for detecting latent disease in the absence of definite clinical signs. Unfortunately for the solution of these problems, as W. E. Coutts[1] has recently pointed out our evaluation of remedies is based mainly on the results obtained in experimental rabbit syphilis, on the rapidity of healing of a lesion, and on favourable changes in blood reactions and clinical symptoms, whereas the final test of efficiency of any anti-syphilitic agent must be gauged by the ultimate fate of patients—years after the cessation of treatment—as well as upon records furnished by post-mortem examination. It is regrettable, in view of this undoubted fact, that the death certificate of a syphilitic person seldom gives any indication of his infection. Dr. Coutts anticipates no dramatic advance in syphilotherapy until the life-cycle of the infecting agent has been elucidated, until problems such as the existence of spirochætes with particular dermotropic or neurotropic affinities have definitely been solved, or until laboratory tests have become even more sensitive and reliable. He may be too pessimistic but it must be admitted that at present no assurance of cure can be given merely on a series of negative serological tests. In fact the exact position of the Wassermann reaction and the various precipitation tests as an indication of cure is still a constant source of argument between the clinician and the laboratory worker. The reliability of the Wassermann test has been keenly criticised, but the original test and its modifications have, nevertheless, withstood attack for 25 years, and the Wassermann reaction remains to-day one of the most valuable laboratory procedures known to medicine. Those of its modifications which have been recommended in the green books published by the Medical Research Council have passed a severe specificity trial organised by the League of Nations in serological laboratories of repute. As between the Wassermann reaction and the newer precipitation tests, Kolmer,[2] who has had an extensive experience of both the clinical and the serological aspects of syphilis, holds that where possible a complement-fixation test as well as a precipitation test should be done; when one test only is feasible, he prefers a complement-fixation test. Believing, as he does, that the strength of a laboratory serological test is proportional to the degree of spirochætal activity, it follows that in his view clinical symptoms depend more on where the activity is occurring than on the amount of activity. According to this theory a few organisms may produce symptoms of syphilis with insufficient reaction for a positive serological test or, on the other hand, a number of organisms large enough to determine a pronounced positive reaction may cause no immediate symptoms. Kolmer urges the clinician not to ignore positive reactions when clinical signs are absent, but rather to suspect negative ones where such signs are present. With regard to negative reactions, Belding[3] expresses the generally accepted opinion that the syphilitic antibody shows no intensification as the result of a provocative injection of an arsenical preparation. From the aspect of treatment it is fortunate that positive serum reactions usually precede clinical signs of relapsing syphilis; hence the value of periodic

[1] Amer. Jour. of Syphilis, 1929, xiii., 489.

[2] Jour. Amer. Med. Assoc., 1929, xciii., 1429.

[3] Amer. Jour. of Syphilis, 1929, xiii., 489.

tests, for they give a warning that further treatment should be given before any symptoms or signs of tissue destruction, which may be irreparable, have appeared. Hazen[4] and others insist, moreover, that no clinical examination is complete without an observation of the heart and great vessels with the fluorescent screen. There is evidence that involvement of the nervous system occurs early in the disease—a clear indication that the cerebro-spinal fluid should be examined as a routine at the end of any course of treatment and again on the occurrence of the slightest clinical sign. The protean nature of syphilitic lesions indicates that the manifestations probably depend more on the soil on which the infection falls than on variations in virulence or species of the invading spirochæte. Of recent years there has been a tendency to standardise the treatment of syphilis to the neglect of consideration of the individual. So much has been written in medical literature of the merits of this or that particular remedy, of the superiority of arsenic to bismuth and vice versa, that doctors tend to adopt one preparation for routine use, forgetting that one agent may succeed where another fails. The effective treatment of syphilis requires both experience and resource as well as a determination to neglect no remedy which may be the most suitable for a particular patient. A selection from among modern chemotherapeutic preparations has made it possible not only to disperse with ease the obvious signs of primary and secondary syphilis, but also in most patients to give a good prognosis as regards complete cure. The same prospect cannot be held out in the tertiary affections, but even here progress has been made on unexpected lines. The control afforded by laboratory tests in syphilis has already raised the standard of effective treatment far higher than it is in certain other chronic diseases. It rests now with the clinician to keep a close watch on the future progress of cases with anomalous Wassermann reactions and to trace the early records of those whose death from cardiovascular or other forms of late syphilis testifies to defects in the scheme of treatment to which they were subjected.

THE EVACUATION OF WOUNDED BY AIR.

THE theoretical considerations involved in evacuating sick and wounded by aeroplane in war-time have recently been considered both in this country and in the United States. Practical experience has been gradually accumulating since the war, and has been summarised by General Fritz Bauer, of the Swedish Army Medical Service.[5] He says that there were no organised attempts to use aeroplanes for military medical purposes in the late war, but that by 1925 the French in Morocco and Syria had actually evacuated nearly 3000 cases by air. In October, 1921, six aeroplanes carried 18 seriously wounded men in 35 minutes a distance which by ordinary transport would have taken three days. In Iraq we followed suit, and after various trials of unsatisfactory types of aeroplanes in March, 1924, the Vermont Victoria, which carries 24 sitting or 14 lying, was adopted as a standard type, and air evacuation came to be the normal method employed. It may be said that in countries such as Morocco and Iraq this method has not proved more dangerous or costly than other modern transport, and it has an excellent effect on morale, because it saves lives and reduces suffering. The great development of flying in the United States has led Captain R. K. Simpson[6] to explore the possibilities of the organisation of air transport for the wounded on a really big scale on the outbreak of war. He states that more than a hundred firms are at present engaged on aeroplane manufacture, and points out that while civilian aeroplanes are not suitable for fighting purposes, and civilian pilots would need a considerable period of training to enable them to take the field in war, both aeroplanes and pilots would be immediately available for ambulance purposes. They would operate entirely behind the lines, and so would not run risks from enemy action, and their work would only be interfered with by dense fog. The actual types and equipment of aeroplanes most suitable for ambulance work have lately been discussed by Group-Captain H. V. Wells.[7] Machines of the small 2-seater type have the advantage of needing only a small landing and taking-off space, but they are mostly incapable of taking a stretcher case owing to the cross bracing wires of the fuselage. A hoop system, however, will dispense with cross wires, and we have such a machine in the Fairey III. F. Wells suggests that evacuation by air finds its greatest value in tropical wars.

[4] Amer. Jour. of Syphilis, 1929, xiii., 489.
[5] Jour. of Roy. Army Med. Corps, February, 1929. Translated from the Rev. Inter. de la Croix Rouge.
[6] Military Surgeon, January, 1929.

DIET AND STERILITY.

FERTILITY, both in the animal and vegetable kingdoms, is naturally associated in our minds with an abundance of good nourishment. Among mankind fasting has been practised from time immemorial as an aid to chaste living. The relation between fertility and abundance of food is not, however, by any means a simple problem, and we think at once of the pronounced tendency of our own poorer classes to produce large families in spite of their having a decidedly limited amount of money to spend on food. There is a considerable body of evidence pointing to some relation between the state of nutrition and the degree of fertility. Dr. Donald Macomber,[8] who has made a special point of investigating possible dietetic errors as the cause of sterility in women, has recently collected some of this evidence. Animal experiments have shown clearly that the quality of food eaten may exert a profound influence on fertility, and in the rat a specific accessory factor named vitamin E has been proved essential for normal reproduction. It is possible also that the quantity of food eaten may be of importance. An experiment in undernutrition carried out in the United States during the Great War may have some bearing on the problem. A squad of 12 men belonging to a training school were submitted for a period of four months to a general dietary restriction so that they lost 12 per cent. of their weight. It was noted during the course of the experiment that without exception they ceased to manifest the usual involuntary phenomena of sexual vigour, although they felt fit and were able to carry out all their regular work and exercise. It has been reported frequently that during times of famine the menstruation of women may cease. It therefore seems possible that at the present time, when fashion decrees that women shall be perpetually undernourished, there may be cases of sterility directly attributable to the state of malnutrition. An analysis of the diets of 206 women seeking advice on account of sterility showed that their consumption of protein was 10 per cent., and of total energy value 18 per cent. below the normal standard. These figures by themselves prove nothing, but at least they suggest the desirability of including an inquiry into the dietary habits of those who are seeking a remedy for sterility. There is no definite evidence at present that deficiency of vitamin E determines the occurrence of sterility in women, although it is worthy of note that the diets of the 206 women mentioned above were in many cases found to be deficient in fat-soluble vitamins. Forty of these women became pregnant after receiving advice on how to improve their state of nutrition, and, though it cannot be assumed that the result was always due to changes in dietary habits alone, the treatment of sterility in the future may reasonably include attention to both the quantity and quality of the food eaten.

[7] Jour. of R.A.M.C., October, 1929.
[8] Jour. Amer. Med. Assoc., 1929, xciii., 1213.

THE FATE OF PREMATURE INFANTS.

THERE is still much uncertainty about the subsequent physical and mental development of the premature or underweight infant. It is agreed that mortality is high in the first few years of life, but views on the health of those who survive are so conflicting that they scarcely help in the prognosis of actual cases. Sigurd Ranke[1] has lately studied the fate of a series of infants weighing less than 2500 g. at birth, and compares his results with those of other investigators including C. Looft [2] and A. Yllpö, who adopted the same birth-weight as a standard of prematurity. Of Ranke's series of 190 children seen at a children's hospital in Malmö from 1915 to 1924, 35 could not be traced, but as many as 82 (53 per cent.) were known to have died. This percentage is almost identical with that found by Yllpö. Further analysis of these figures showed that 78 of the 82 died in the first year, and that after this age the mortality was not greater than that of full-term infants. Of the 73 children who could be traced and re-examined, Ranke found only four (5·5 per cent. of the survivors) who were classed as mentally defective. This gives a figure of 3·4 per cent. of traced cases surviving the first six months, compared with 7·4 per cent. found by Yllpö. Besides the four aments there were nine children in Ranke's series who were somewhat backward. The incidence of mental impairment is considerably lower than that found by some other authors he quotes. The majority of the premature children traced by Looft after 10 years were found to be retarded, while L. Salomonson records a mental deficiency rate of 21 per cent. On the other hand, H. Finkelstein and others found no cases of amentia. A striking difference in the series of Looft and of Ranke lies in the incidence of Little's disease, which was 18 per cent. in the former and nil in the latter. Ranke gives interesting observations on the subsequent measurements of these children; their weights tended to be at or below the average, and the heights at or above the average, corresponding with the observer's impression of "long, lean and slim" children. The principal fact which emerges from these important investigations is that prematurity, though often associated with amentia, is not an actual cause of it. The causes of prematurity itself are obscure and probably numerous, and the subsequent characteristics of the infant will be conditioned by these varying causes rather than by the state of maturity reached at birth.

A NEW KIND OF HISTORY.

"Some day a man will write a new kind of history. Its keynote will be the shaping of human destiny by disease, and, let us hope, the guidance of this destiny by virtue of the control of disease."

WITH these remarks Dr. Allen Krause opened his Hermann M. Biggs Memorial Lecture for 1927; the materials for such a task are obviously considerable, and Dr. Krause himself made no little use of them in the lecture which has now been reprinted as a booklet.[3] Using the social history of the United States as his milieu he sketches the long struggle which has gone on to obtain control of the tuberculosis problem since the early days of the public health movement. Phthisis was uncommon in America at the end of the eighteenth century, but by 1828 it was increasing "with fearful strides." Brought in by the early settlers, Dr. Krause thinks that the disease was quite likely held almost under cover as long as a sparse agricultural economy existed. Even in the developing villages and towns phthisis was probably uncommon, but growing cities began to bring it into notice, and by the time the manufacturing side of the nation had made its presence felt at the beginning of the nineteenth century, tuberculosis had become a national menace. Dr. Krause has some astonishing facts to relate of the industrial revolution in America, but although the scene is laid on the other side of the Atlantic the outlines of the picture seem to be strikingly similar to our own; James Truslow Adams and Josiah Curtis tell much the same tale as Charles Kingsley and Arnold Toynbee. Ill-ventilated factories, crowded dwellings, all the insanitary conditions which were the concomitants of the early days of industrialisation, helped to create a high tuberculosis death-rate. It was an age of enormous industrial expansion and an accelerated impulse towards urbanisation, and according to Dr. Krause, "by 1850 it was plain that mid-century industry was the handmaid of tuberculosis." He then goes on to show how public health machinery is triumphing, slowly but surely. In the early days of the industrial revolution, tuberculosis was an urban malady and an urban problem; the factory system was in process of evolution, and living conditions did not keep pace with them. Now the position is changed. The towns are out-stripping the country and if civic sanitation continues to progress at the present rate, tuberculosis is likely to become a rural rather than an urban problem.

[1] Acta Pædiat., 1929, ix., 46.
[2] See THE LANCET, 1928, i., 244.
[3] Tuberculosis and Public Health. By Allen K. Krause. Baltimore. 1928. Pp. 54. Reprint from the American Review of Tuberculosis, 1928, xviii., 271–322.

THE INTRADERMAL TEST FOR HYDATID DISEASE.

EIGHTEEN years have elapsed since Casoni described his intradermal test for hydatid disease, and in the intervening period various modifications in its technique and interpretation have been made. The most important development has been an appreciation that the reaction manifests an immediate as well as a delayed phase. Casoni originally injected 0·5 c.cm. of hydatid fluid intradermally and noted the marked erythema of the skin, the infiltration and the puffy swelling of the subcutaneous tissues which appeared some hours later in hydatid cases. This phase is now known as the delayed reaction. Magath in 1921, using a technique similar to the Pirquet test, observed rapid wheal formation and cutaneous erythema following the application of hydatid fluid to the scratched skin in three people harbouring hydatid cysts, and in the following year Ithurrat and Calcagno reported a similar type of response occurring within a few minutes of the intradermal injection of a similar antigen. Sixty-three of their series of 65 patients suffering from hydatid gave an immediate response, and only 4 out of 127 cases subjected to the test failed to correspond with the operative findings. Later in Australia Kellaway, Dew, and Williams studied both phases of the reaction at the Walter and Eliza Hall Research Institute and came to regard the immediate reaction as of great diagnostic value. Immediate wheal formation, however, was noted in the absence of demonstrable hydatid infestation in cases showing jaundice, urticaria, and generalised skin diseases. This year two additional papers have originated from the same Institute, the first being a critical analysis by K. D. Fairley[1] of the results of the test obtained over a period of five years. Exacting criteria of diagnosis were enforced, all doubtful cases being rejected from the series. In hydatid patients tested before their first operation 82·9 per cent. showed the immediate reaction and 40·4 per cent. the delayed response. The anatomical location of the cyst was found to exert little or no effect, but its pathological condition definitely influenced the reaction, since 92·6 per cent. of cases with ruptured or suppurating cysts yielded positive results compared with 77 per cent. in which these complications were absent. On the other hand, 35 out of 87 cases (40·2 per cent.) which gave an immediate wheal failed to show any evidence of hydatids on detailed investigation, and the justifiable conclusion was reached that no surgeon

[1] Fairley, K. D.: Med. Jour. of Australia, 1929, i., 472.

should operate solely on the basis of an immediate reaction. No evidence of hydatid was found in 96·8 per cent. of hospital patients in whom wheal formation was absent and a negative reaction came to be regarded as highly important, though not infallible, evidence in excluding echinococcosis. In Fairley's opinion this constituted the chief clinical value of the test. During the post-operative period immediate reactions were recorded in 90·2 per cent. of patients. Recent rupture of the cyst with consequent temporary desensitisation was sometimes found to be responsible for negative findings. When no other cysts were present the reaction often persisted for years, but its continued absence in any patient showing a positive result before operation was regarded as evidence of cure.

The second paper, written conjointly by K. D. Fairley, N. H. Fairley, and F. E. Williams[2] was the outcome of an inquiry into the causation of immediate reactions in patients showing no other evidence of echinococcosis. More exacting standards and controls for the test are recommended with the object of diminishing or abolishing the growing list of pseudo-reactions reported by numerous observers. Accurate measurements of the immediate wheal and of the area of infiltration in the delayed reaction are shown to be essential. It is pointed out that in the past the results have been classified as "positive" or "negative" largely on the impressions of what constituted a reaction or a failure to react, and as these conceptions varied with individual observers no accurate comparison of results is possible. Guisti and Hugg first reported the presence of pharmacologically active substances in samples of hydatid fluid, and it is now shown that such fluids may occasionally give rise to either direct or indirect types of reaction in normal individuals. In consequence it is urged that fluids be tested on a series of normal individuals in order to exclude pharmacologically active substances as well as standardised for antigenic potency on those harbouring hydatid cysts.

To perform the test 0·25 c.cm. of standardised hydatid fluid is injected into the dermal layer of the skin covering the outer surface of the arm, a similar injection of normal saline solution (0·9 per cent.) serving as a control a few centimetres away. Care is taken to ascertain that this area has not been previously tested. If so, another site must be selected since local sensitisation was proved to result in a normal person from the repeated injection of hydatid fluid into an area of skin ringed with silver nitrate. In recording results wheals the size of a shilling (diameter 2·4 cm.) are regarded as positive, those not exceeding sixpence (2·0 cm.) as negative, and those of intermediary dimensions as of doubtful significance. In the latter case the test is repeated. Outrunners resembling pseudopodia are taken into account in making measurements. When the control injection of saline produces a wheal exceeding 2·0 cm. in diameter, the patient is rejected as an unsuitable subject for the test, and the same applies if there is a triple response to the stroke test (Lewis). A wheal even of the dimensions mentioned, however, was not found to be pathognomonic of echinococcosis. Certain other fallacies were shown to exist, and in any case presenting a positive reaction further investigations are advised. Filtered sheep serum (0·25 c.cm.) is injected intradermally in order to exclude sensitiveness to sheep serum proteins, for the data presented clearly demonstrate that hydatid fluid from ovine sources contains sufficient host protein to produce positive reactions in patients not infested with hydatids, but sensitive to sheep serum. Finally, the group reactions attending concomitant helminthic infestation receive consideration. Both immediate and delayed reactions were observed in non-hydatid cases harbouring other tapeworms such as *Tænia saginata*, and for this reason a search for intestinal helminths may be indicated. In nematode infestations less conclusive evidence of group reaction was presented.

The new facts elicited by these important investigations clearly indicate that the intradermal test affords no short cut to diagnosis. For many years it has been appreciated that a specific antigen-antibody reaction underlies the various biological tests for echinococcosis. In the intradermal test, unfortunately, an additional vascular mechanism is involved. Increased permeability of the capillaries with fluid transudate underlies wheal formation, and according to Lewis this in turn is dependent on the liberation of "H substance" during the intracellular union of antigen and antibody. Be this as it may, the vascular factor introduces its own peculiar fallacies, the elimination of which calls for both skill and judgmention the part of the practitioner employing the test. Serological reactions, like the complement-fixation and precipitin tests, are conducted in vitro and do not suffer these limitations; of necessity they must remain the most reliable of the biological aids to diagnosis in those countries where hydatid is endemic

[2] Fairley, K. D., Fairley, N. H., and Williams, F. E.: Ibid., 1929, ii., 320.

CLEAN AIR.

THE National Smoke Abatement Society has produced a new journal called *Clean Air*. The first issue, dated Autumn, 1929, is sent forth with good wishes from many eminent people, and contains a number of articles on the purification of the atmosphere in our cities. Smoke was long regarded as the inevitable accompaniment of industry, and the possibility of freeing the air from it was at first the fad of a few. The idea has, however, taken firm hold and may very soon become the normal expectation of us all. It has been demonstrated over and over again in industry that the most hygienic method is the most economical, and cleansing of the atmosphere obeys this law, for smoke is simply wasted fuel. There are three principal lines along which to proceed with smoke prevention: gas, electricity, and smokeless fuels like anthracite. *Clean Air* contains an article on the use and development of gas in industry, giving examples of the innumerable directions in which gas can be economically used in various trades. The director of a research institute in America has estimated that the potential market for industrial gas is at present only 2 per cent. saturated. Another article deals with the uses and development of electricity in industry and stresses its very wide range of application, its precise and positive control, the exceptional uniformity of temperature which it yields, and the reduction to a minimum of labour requirements. It must be admitted, however, that the private consumer is the chief offender against the purity of the atmosphere; regulations have already gone far towards abolishing the cloud of smoke that used to belch forth from factory chimneys, but every small house contributes its little wisp to the fog that lies over London. The annual review of domestic heating given in the new journal suggests that those who long for the comfortable sight of an open fire burning in the grate should have their wish—more or less—by burning either anthracite or high quality gas coke in their grates. The low-temperature carbonisation fuels have saved the open grate from the condemnation with which it was threatened by the reformer, and though it must be admitted that such fuel still remains rather more expensive than coal, it reduces dirt and labour in the house as well as smoke outside it. Much experimental work requires to be done on these combustibles, and there is also scope for improving the general temperature of British houses by central heating or by insulation, so that the amount of fuel burned in the open grate is reduced. There is a very great deal to be said for the abolition of smoke, and practically nothing except prejudice or sentiment (and the price of smokeless fuels for those who want the open grate) to be said against it. We hope that the new journal will receive the support for which it

asks and will be able to carry the campaign for clean air into the homes and factories of the whole country.

WE regret to announce the death of Sir Sidney Alexander on Dec. 9th, at the age of 66. From 1910 to 1920 he was Mayor of Faversham, where he practised for many years before taking up consulting work in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Vice-Admiral Arthur Gaskell, C.B., O.B.E., Medical Director of the Royal Navy following precedent, has accepted an extension of his appointment for one year from June, 1930, when he will have completed the ordinary term of three years, having succeeded Sir Joseph Chambers, K.C.B., C.M.G., in 1927. Surg. Vice-Admiral Gaskell, who is 58 years of age, joined the Navy in 1893. He was made C.B. for his services with the Royal Naval Division at the Dardanelles where he was A.D.M.S. Afterwards he was in charge of the hospital ship *Soudan* and later head of the R.N. Hospital at Simonstown.

Surg. Comdrs. A. R. Fisher and T. R. L. Jones are placed on the Retd. List at their own request, with the rank of Surg. Capt.

Surg. Lt.-Comdr. F. G. Hunt to be Surg. Comdr.

The following appointments are notified: Surg. Comdrs. E. Moxon-Browne to *Malaya*; G. L. Ritchie to *Greenwich*; and C. M. R. Thatcher to *London*. Surg.-Lts. J. J. Mason to *Egmont*, and J. W. L. Crosfill to *Concord*.

ROYAL ARMY MEDICAL CORPS.

Lt. H. McNeill relinquishes his tempy. commn.

ARMY DENTAL CORPS.

Maj. F. W. Shilton retires on account of ill-health receiving a gratuity.

TERRITORIAL ARMY.

Maj. A. P. Draper, R.A.M.C., vacates the appt. of Divl. Adjt., 52nd (Lowland) Div., T.A.

Lt. G. Williams to be Capt.

Supernumerary for service with O.T.C.—Lt. G. P. Crowden to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. W. T. Gardiner, from Active List, to be Maj.

Capt. W. G. Saunders, from Active List, to be Capt.

Lt. R. L. Turner, from Active List, to be Lt.

INDIAN MEDICAL SERVICE.

Lt. D. P. Lambert to be Capt.

The undermentioned officers relinquish their temp. commns.: Capt. Rama Shanker Varma, and Lts. Bonbehari Bhattacharji and Mazhar Hussain Shah.

COLONIAL MEDICAL SERVICES.

The following new appointments have been made by the Secretary of State for the Colonies:—Dr. H. G. Harvey, Medical Superintendent, King Edward VII. Memorial Hospital, Bermuda; Dr. W. B. Sutherland, Medical Officer, Malayan Medical Service, Federated Malay States; Dr. E. Holmes, Medical Officer, Iraq; Major J. W. C. Stubbs, Inspector of Medical Services, Iraq Army; Captain G. A. C. Gordon, Medical Officer of Health, Nigeria; Dr. H. G. Pritchard, Medical Officer, Nyasaland; and Dr. G. Q. Chance, Medical Officer, Malayan Medical Service, Straits Settlements. Dr. G. R. Baxter has been appointed Medical Officer of Health, and Dr. W. R. Little, Medical Officer, on the West African Medical Staff.

ROYAL SEA BATHING HOSPITAL, MARGATE.—The 138th annual report of this hospital states that the average daily number of occupied beds was 301, and the average cost per occupied bed was £127 5*s.* 11*d.*, as against £134 13*s.* 7*d.* in 1927. Portions of the building which are built of red brick are being so much affected by the salt-laden atmosphere that the bricks are crumbling and in some cases completely decayed. Heavy expenditure will be needed to check the degeneration.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LVI.

INTERPRETATION OF RADIOGRAMS OF THE ALIMENTARY TRACT.

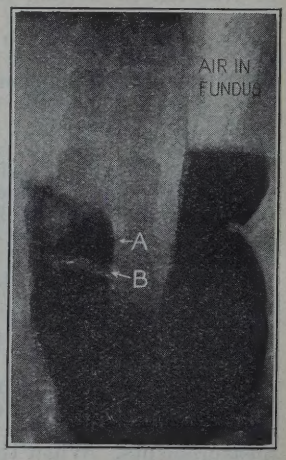
PART III.*—THE DUODENUM.

RADIOLOGISTS talk of the first part of the duodenum as "the cap." It looks and behaves quite differently from the rest of the duodenum. Functionally, apparently, it is different, for it fills up with opaque food into a triangular, cocked-hat shaped shadow, poised on top of the pylorus, usually pointing towards the gall-bladder; whereas the food passes rapidly through the second and third parts and is divided up by the muscular action of its walls, so that no definitely outlined shadow is seen (Fig. 17). In stout patients the cap is sometimes turned backwards and lies almost directly behind the stomach. This disposition greatly increases the difficulties of palpation and also of obtaining films, for it necessitates an oblique or even a transverse illumination.

Duodenal Ulcer.

The duodenal cap usually fills satisfactorily, at any rate if we are patient and wait. But if there is irritation it is sometimes extremely difficult to get the cap outlined. With patience and the assistance of manipulation it is usually possible to hold some opaque food in the cap and to manipulate it sufficiently to demonstrate that the outline is not persistently deformed. Ulceration of the duodenum is almost confined to the first part (90 per cent. or more), and whenever there is ulceration there is *persistent* deformity of the cap shadow (Figs. 18 and 19). This deformity is largely due to spasm, and the resultant picture varies widely according to the site of the ulcer and the degree of spasm. Every attempt should be made to demonstrate the actual crater of the ulcer. This is not by any means always possible; yet, apart from the demonstration of the crater, I do not think that we are justified in making an absolutely positive diagnosis. With a deformity that is persistently the same, the probabilities are very high that it is due to the presence of an ulcer, but it might be caused by adhesions, and, personally, I reserve the definite diagnosis for the cases in which the ulcer crater is detected. Every observation on the duodenum and also on the stomach, whether positive or negative,

FIG. 17.



Normal duodenal cap (A). The stomach is of the long type and the cap points vertically. Its upper limit is on the level of the crest of the ilium—i.e., the duodenal attachments have allowed it to descend to compensate for the "gastroptosis." Note the large quantity of air in the stomach. Probably a nervous type of female subject who is inclined to air-swallowing and consequent eructation. Note also the food passing through the second and third parts of the duodenum. In this and subsequent figures B = pylorus.

* Parts I. and II., on the Œsophagus and the Stomach respectively, appeared in THE LANCET of Nov. 30th and Dec. 7th. The Intestines will be dealt with in subsequent issues.

should be confirmed when the patient comes up for examination on the second day.

Beyond the duodenal cap the opaque food is quickly broken up into fine division. Sometimes there is accumulation in the loop of the duodenum—duodenal ileus. This may or may not be pathological, due to some kinking or drag at the duodenojejunal flexure, or other cause of obstruction, but unless it is well marked it is wise to regard it as of no pathological significance. As often as not we do not find it when we re-examine, particularly if the circumstances are more normal than at the first examination. Rapid emptying of the stomach often gives rise to such an appearance. Certainly a slight degree of duodenal ileus may be disregarded as a guide to surgical interference.

FIG. 18.

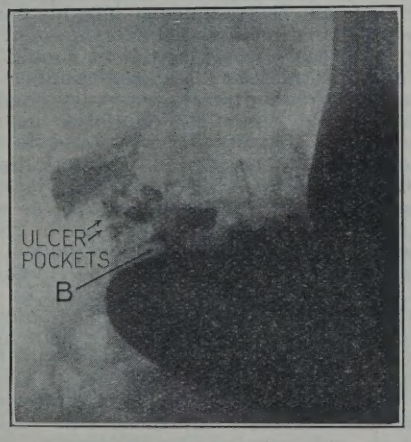
Deformity of the duodenal cap—a typical type of deformity.

New growths of the duodenum are extremely rare—an interesting fact considering the extraordinary prevalence of ulceration. There is certainly no tendency of duodenal ulcer to become malignant. Whether the very similar peptic ulcer of the stomach is as liable to malignancy as was formerly supposed seems to be open to question. X ray observations are all against such a sequence except in very rare cases.

Diverticula.

Diverticula of the duodenum are comparatively common and they are liable to give rise to symptoms that are indistinguishable from those of duodenal ulcer. The pocket of the diverticulum, which is usually about the size of the end of a finger and arising about the junction of the first and second part, is more readily identified on the screen than on the X ray film. Diverticula may occur in other parts of the

FIG. 19.

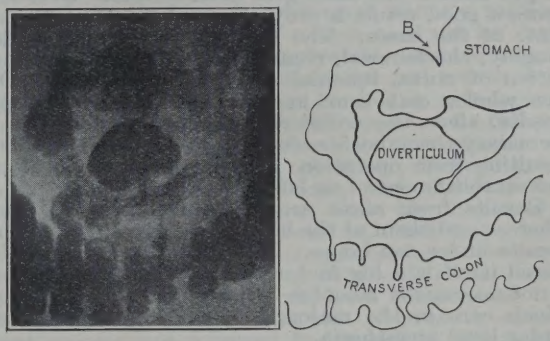


Deformity of the duodenum showing the pockets of two ulcers near the apex of the cap.

duodenum (Fig. 20) and also in the small intestine, but they are not so common and are probably less often associated with symptoms. A condition of the first and second part of the duodenum which may give rise to symptoms of duodenal ulcer and to appearances that are rather similar to those of a diverticulum is caused by a dropping over and twisting of the junction of the first and second parts, an appearance that is not readily appreciated on the screen and not always recognised as a possibility on the operating table.

Adhesions about the gall-bladder are common, and many of them give rise to deformities of the duodenum which are almost, if not quite, indistinguishable from those caused by ulcer. Palpation of

FIG. 20.



Large diverticulum of the third part of the duodenum—an unusual site. Patient recumbent and stomach only partially filled. Normally the food passes rapidly through the duodenum. In this instance the radiologist by his manipulation has dammed the third part and forced food out of the stomach in order to obtain this radiographic effect.

the food in the duodenum and the detection of undue fixation is the only way in which one can attempt to arrive at a reasonably accurate diagnosis.

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Special Articles.

SOME OBSERVATIONS ON SCANDINAVIAN SURGERY.

BY T. HOLMES SELLORS, B.M. OXF.,
G. H. HUNT TRAVELLING SCHOLAR, UNIVERSITY OF OXFORD; SURGICAL REGISTRAR, MIDDLESEX HOSPITAL.

II.

VASCULAR SURGERY.

Arterial Embolism.—The clinical and operative study of arterial embolism was greatly advanced by a paper from Prof. Einar Key, of Stockholm, in 1922. This year he has published a further report in which the results of 213 cases have been collected. This includes 17 cases of his own. The removal of emboli has become a standard surgical procedure, and the diagnosis is based on the general condition of the patient—i.e., possible existence of heart disease, &c.; and the site of the initial pain, lividity, and loss of pulse below this region give an accurate localisation of the embolus. The operation is usually performed almost exactly over the site, and the time factor is of great moment on account of thrombosis behind the embolus. The majority of these cases originate in heart lesions, but arterial disease may also play some part. The operation of embolectomy should be performed as soon as possible after diagnosis, so as to check the obliteration of collateral circulation by back-spread of thrombosis. Also there is the risk of malnutrition with subsequent ulceration and secondary thrombosis at the site of the embolus, which is most commonly at a bifurcation of two vessels.

The affected artery is exposed, pulsation is absent, and the rubber-like clot can be felt blocking the lumen. Soft clamps are applied beyond the limits of the clot and the intervening artery is incised. The clot is gently removed, and release of the clamps alternately will demonstrate freedom of the blood stream. Sutures of very fine vaseline silk are used to repair

the incision. There has been no record of stenosis or aneurysm which can be attributed to the sutures. The prognosis ultimately is not satisfactory in cases with an underlying heart lesion, though a very large number may be said to be cured as regards their embolism. The figures from Prof. Key's paper show that, if the operation is performed under ten hours, 51 per cent. of the cases give good results. Over ten hours a good result is only obtained in about 23 per cent. of the cases. The frequency of embolism is, roughly, the femoral, common iliac, popliteal, bifurcation of aorta, brachial and axillary arteries. On the whole, embolism in the arm gives the best results, since the collaterals are freer, and even if secondary thrombosis occurs, the interval of freedom resulting from operation may be sufficient to allow the establishment of an efficient circulation.

Results from aorta are, generally speaking, bad, whereas embolism of the leg arteries gives fairly good results under ten hours. Naturally the state of the vessel itself is a big factor in the prognosis, but age is not necessarily a contra-indication to the operation, which can, in the majority of cases, be performed under local anæsthesia.

Venous Thrombosis.—Thrombosis of the femoral and iliac veins as a post-operative complication is common in Scandinavia as compared with England. The reason of this is not clear, since all commonly recognised causes have been countered as far as possible. It is said that the incidence in the north of Sweden is not as great as in the south, where the type of individual is heavier in build. There is certainly a relative tendency to the thrombotic condition in big, fat people, who have been submitted to an incision in the anterior abdominal wall, but no amount of breathing exercises, massage, or movements of the lower limbs seems to have much effect in diminishing the frequency of this condition. Prof. Nyström, of Upsala, has made some preliminary observations on the blood-platelet count, and by daily estimation is frequently able to predict, but not prevent, the onset of thrombosis.

Pulmonary Embolectomy.—From the frequency of venous thrombosis it may be gathered that pulmonary embolism, too, is not rare. To meet this dramatic emergency a modification of Trendelenburg's original operation is being practised. To date 20 failures have been reported, as against seven or eight complete successes, but it is interesting to note that there had been no complete success reported up to 1924. The time factor between the actual embolism and removal of the clot imperatively demands emergency measures. The surgeon may not be at hand, and consequently, in the majority of Scandinavian clinics, the first and second assistants have been trained to perform the operation if occasion arises. Where possible, at the onset of an embolism, the patient is hurried to the operating theatre, where sterilised instruments are kept constantly in readiness. The operation itself is not started until it is absolutely certain that the heart will stop in one or two minutes, or has already stopped. Anæsthesia is unnecessary; a vertical incision over the second to fifth costal cartilages is made, and by division of the cartilages the pericardium and pleura are exposed. The pleura is pushed aside, and the upper part of the pericardium incised. A big clamp is passed through the transverse sinus around the aorta and pulmonary artery controlling these vessels, and the base of the pulmonary artery itself is then opened and endeavours are made to extract the clot. Sometimes the clot comes free with gentle application of forceps; at other times a sucker may have to be used. Adrenalin is injected into the base of the aorta so as to reach the coronary circulation, and the control clamp is freed while the incision in the pulmonary artery is held. If the heart starts beating the hole in the pulmonary artery is sutured, the tissues are anæsthetised, and the original incision repaired. I saw Prof. Nyström's second successful case two or three weeks after the operation, and she was apparently making a satisfactory recovery. It is certainly a field of surgery which has considerable possibilities, since the proportion of successes, even allowing for unreported failures, is very encouraging, the more so when it is realised that the cases were not operated on until the heart had ceased to beat. A paper containing details of the operation as well as a full and lucid account of arterial embolism has been published this year by Prof. Einar Key in *Ergebnisse der Chirurgie*, March 22nd, 1929.

RADIOLOGICAL CONGRESS.

LONDON, DEC. 4TH–6TH, 1929.

THE annual meeting of the British Institute of Radiology incorporated with the Rontgen Society was held in the Central Hall, Westminster, from Dec. 4th to 6th. In the course of the meeting the tenth Mackenzie Davidson Memorial Lecture was delivered by Prof. GOSTA FORSSELL, in charge of Radiumhemmet, Stockholm, on the Radiotherapy of Malignant Tumours in Sweden[1]; and the twelfth Silvanus Thompson Memorial Lecture by Prof. A. S. EDDINGTON, F.R.S., on X Rays in the Stars. A number of technical papers were read, among them one by Dr. FRANGCON ROBERTS, which appears in full on another page, and several discussions took place on debatable questions of the moment.

Dr. L. A. ROWDEN being in the chair, Dr. G. B. BATTEN opened a discussion on the

Requirements of Clinicians from Radiologists and Vice Versa.

He said that "radiologist" had come to mean a doctor who used X rays for diagnosis or treatment, while "radiographer" meant an unqualified person who used X rays. The requirements of clinicians from radiologists should be exactly the same as their requirements from all other specialists: such aid as would help them to diagnose and treat their patients in the best possible way. In many cases a team was necessary. The clinician most of all required really good films with a careful, well-considered report. The radiologist required from the clinician everything that any other specialist would require to help him to elucidate the problem for correct diagnosis. The clinician must take the radiologist into his confidence and state in what directions help was needed. There were very rare cases where a patient should be sent without any information; but the number so sent in the patient's real interests was very small. The radiologist should treat the clinician in a truly professional and consultative way, and in difficult cases should try to arrange a personal discussion. He ought to have beds of his own. His relations with his patient should be strictly ethical and as wise and reticent as possible, and he should never give away the clinician. The unsatisfactory clinicians met in actual practice could be divided into (1) those who regarded radiology as a joke—these could be allowed to die out; (2) those who regarded it as unimportant and radiologists as opponents rather than helpers—these were diminishing; (3) those who belittled radiologists and withheld knowledge about the patient; (4) those who wanted to interpret the radiograms themselves; (5) those who expected a non-medical radiographer to interpret X rays; (6) those who wanted the films interpreted as pictures only, without any opinion about the condition of the patient; (7) those who left too much to the radiologist and ignored the clinical aspect of their cases. Radiologists were of two kinds—pure radiologists and practitioners taking radiology as their specialty. It took a population of 50,000 in a town to maintain a pure radiologist. The relation of the general practitioner radiologist with his clinical colleagues was less simple than that of the pure radiologist, and he must be particularly ethical in his conduct. The radiologist must use all the knowledge he had, apart from the

See THE LANCET, Dec. 7th, p. 1214.

X ray showings. The clinician could not properly dictate treatment to the specialist unless he was himself a skilled electrotherapist. The radiologist must be right, and to be right he needed experience, good films, careful technique, and good apparatus.

Dr. D. D. MALPAS said that he parried patients' questions by explaining that he had not got a finished story until he had seen the last film.

Dr. A. J. ILES said he told patients that only a bad judge would condemn the prisoner before he had all the evidence. Radiologists were entitled to loyalty which they did not always get from clinicians.

Dr. S. MELVILLE said he had suffered in the past from the difficulties Dr. Batten had described, but had noticed a great improvement of recent years in the attitude of clinicians. The fault lay nowadays, he felt, with the radiologist, who sometimes foolishly encroached on the province of the clinician and offered indifferent work. He must offer really good work and refrain from dogmatising unless certain.

Dr. GRACE BATTEN related some of the extraordinary requests and inadequate requisitions she had received from clinicians. All these people triumphed over or blamed the radiologist for not making a correct diagnosis.

Dr. JOHN MUIR said that the only way to get peace in this world was to suffer fools gladly, and urged a conciliatory attitude towards clinicians. If the practitioner with his living to make could save his face by blaming the radiologist it was but human to do so. The radiologist should never be afraid to say he did not know.

Dr. FFRANGCON ROBERTS agreed with Dr. Muir and had no complaint to make of his hospital colleagues. The panel practitioner must be credited with doing his best under difficult circumstances. What to tell the patient constituted a most difficult problem, which depended largely on the kind of patient and the kind of doctor. It was no use beating about the bush with intelligent patients. Sometimes a patient moved into a new district from which a new doctor would write or wire for the films of an earlier examination; this was quite wrong, and the new doctor had no right to anything but a copy of the report.

Dr. MALPAS agreed that radiologists often made trouble for themselves and that a more conciliatory manner would be better.

Dr. F. I. JUPE was pleased to think that the *mariage de convenance* between clinician and radiologist was being changed to a love match, and that both parties were coming to look on the patient as their common child.

Dr. ILES spoke of the difficulty of deciding to whom the film by right belonged.

Dr. MILES asked to what extent clinicians should be allowed to see the film. He thought the radiologist's report should be enough, except when a surgeon or dentist had to operate as a result of the report.

Dr. G. HARDMAN said the radiologist ought to give the report to the new doctor on request. He thought that in the main radiologists received great courtesy from their colleagues.

Dr. A. MACGREGOR thought the clinician often insisted on a definite statement when the radiologist was unprepared to make one.

The CHAIRMAN thought it was a question of give and take; when a radiologist disregarded the clinical aspect of his cases he was rapidly degenerating into a radiographer. He must go into the history and make an examination. He (Dr. Rowden) never let films go out of his possession; if he did they never came back. The film was the property of the person who took it, but the patient had a perfect right to hear the interpretation.

Dr. BATTEN, briefly replying, said that the films belonged to the radiologist who had ordered them to be taken or to the hospital, but the doctor had a right to see them and the patient had a right to know the report.

Aspects of Radiation Therapy.

Prof. S. RUSS spoke of intensity relations, pointing out that greater intensities produced more violent reactions. Radiation of any kind released electrons from the medium and might or might not produce clinical changes. The liberation of electrons was a disturbing factor, though a perfectly normal process in the human body, which spontaneously liberated about a million ions a minute. The rate of release need not be very great in order to produce appreciable effects—something of the order of one electron per cell per second.

Mr. GEOFFREY KEYNES spoke of the radiological treatment of carcinoma of the breast. Radiology in the past had been confined to four classes of patients—those who refused operation; those treated prophylactically after operation; those treated for recurrences after operation; and the hopelessly inoperable. Comparison between radiology and surgery could only be based on operable cases. Surgery at St. Bartholomew's had not been satisfactory, and the successful eradication of local recurrences by radium had led to the treatment of primary cases. Great success had followed in a series of 145 cases, all of which had been carefully documented. Good results had been obtained in 45 out of 67 patients up to the end of 1928 and half of them were free from demonstrable signs of disease. Of 26 inoperable cases a good result was recorded in 12, and six of them were apparently cured. It was unlikely, though possible, that X rays would have been equally successful with so little damage. In the early case it was possible to promise almost with certainty that in five months after a single radium treatment the breast would be apparently normal. X rays had a part to play in supplementing radium treatment in the few cases where it had proved inadequate.

The Relative Value of X Rays and Radium.

Dr. N. S. FINZI dealt with the relative value of radium and X ray therapy in malignant disease. Both were valuable, and it was curious how seldom patients took a radiological as well as a surgical opinion. During 20 years' of experience he had seen improvement follow each increase in voltage and filtration of X rays, and the limit of this improvement had by no means been reached. For some cases radium was more valuable, for some X rays, and for others both. Radiologists should be fully acquainted with both agents. The importance of radical X ray treatment was not adequately appreciated; the results fully justified the courage required on the part of radiologist and patient. Many surgeons were just learning to apply radium; it was to be expected that they would have many failures. The radium bomb had many of the advantages of X ray treatment, but the rays were more penetrating and probably more efficient physically and biologically. The greater homogeneity obtained with X rays must be balanced against the greater effectiveness of radium gamma rays. In very radio-sensitive growths X rays were the treatment of choice every time, even in the skull. For very small growths, tending to remain localised, radium was preferable. For very radio-resistive cases radium was to be selected if surgery or diathermy was inapplicable. By increasing the time factor and decreasing the intensity better results could be obtained in many cases. The position of the growth was important. In the mouth and upper air passages the best results had been obtained with X rays alone or a combination of X rays and radium. Seeds in the local growth and a radium needle barrage for the cervical glands had given good early results, but the cases would probably show recurrences. The radium bomb through six points of entry would probably prove eventually to be the ideal application. In growths of the cervix radium for the growth and X rays for the glands were best; after X rays alone there was a tendency to recurrence. In rectal carcinoma radium seemed definitely better than X rays. If the mediastinum were involved in breast cancer X rays might still give good results, and they

might do wonders for early cases. With the use of radiations for operable growths a great change had come over the prospects of the patient. Skill varied, and counted for a great deal.

Dr. MALCOLM DONALDSON said that for cancer of the cervix at St. Bartholomew's about 5 mg. of radium element, split up into 20–25 needles, was inserted all round the growth and left for 144 hours. He showed figures from various centres; the survival rate for the needle technique was not quite so good as for other methods. Needles seemed to be unsatisfactory for deeper parts of the growth. He therefore proposed in future to supplement the Stockholm technique with, first, intra-abdominal radium and, secondly, X ray treatment. He reviewed the 34 cases he had treated with intra-abdominal radium, and declared that the method was worth continuing. He now treated carcinoma of the vulva with very small intensities for two or three weeks; the primary results had been astonishing. The time factor was also important in cancer of the body. In non-malignant conditions the only problem that arose was to decide which patients could justifiably have their ovaries destroyed. Larger doses might perhaps reduce the menopausal symptoms.

Dr. J. E. LYNHAM spoke of the association of radium and X rays in the treatment of malignant disease. Radium undoubtedly gave results rapidly in some cases, but the final results of X rays were quite as satisfactory; the two agents were supplementary. Permanent success after radium only followed when the disease was localised, and was comparable with surgical success except that the cases treated by radium were inoperable. When the disease had become generalised even local cure could not be obtained, and when recurrence developed in patients previously doing well it was usually a sign of general activation of disease all over the body. There was no means of telling whether or not the disease had become generalised in any particular case. Extension by the lymphatics could be prevented by prophylactic irradiation by radium barrage, radium pack, or systematic X ray applications. Surgically treated cases should be followed up by periodic X ray or radium treatment to the site of the original tumour and to the related glands. As a matter of physics as well as of clinical experience, X rays and radium tended to approach each other as time went on, and the best results would be attained by combining or alternating them.

Use and Abuse of Radium Needles.

Prof. F. L. HOPWOOD read a paper on behalf of Miss F. E. Smallman and himself, and dealt with the economic aspect of his subject. At St. Bartholomew's it had been found that half a gramme of radium, distributed in 222 needles and eight other containers, could be used for 899 patients in a year. Needles of 1 mg. and 2 mg. radium element content were best for a general hospital, and an average yearly efficiency of use of 50 per cent. or more should be considered satisfactory. Long needles were much more valuable than short ones; there was a marked gain in mechanical strength if 0·6 mm. of platinum were used for the walls instead of 0·5 mm.; and needles used for surface application were less liable to damage than those inserted into malignant growths. Every trivial injury should be taken seriously and the needle set aside for immediate repair. The weakest spot was the eyelet, and a new and stronger type of eyelet had recently been introduced. Leakage from damaged needles was rare if they had been gold-soldered, but was such a nuisance that needles should be periodically tested. If any loss was suspected a visual and electroscopic search should at once be carried out on all refuse and laundry, but containers which had passed through an incinerator might be negative to the electroscopic test owing to melting of the solder seal. During ten years St. Bartholomew's had lost track of three needles, containing 3 mg. of radium.

Dr. ROWDEN thought that the kind of ray which would alter cell activity was the kind of ray that would be absorbed by the cell; the short-wave ray in its passage through the cell generated secondary rays which were absorbed. Superficial growths would disappear very rapidly under soft ray treatment; which ray was to be chosen?

Prof. HOPWOOD replied that the question was not simple. Experimentally the type of damage produced by the two types of radiation were almost indistinguishable. The type of ray chosen must be the one that got to the required spot, but time and intensity reactions also came in. The rate of absorption depended on a number of factors.

THE ANNUAL DINNER.

The annual dinner of the Institute was held on Friday, Dec. 6th, at the Trocadero, London, the President of the Society, Mr. C. Thurstan Holland, taking the chair at a large assembly. After the loyal toasts Mr. Cuthbert Andrews proposed the Prosperity of the Institute, in the course of which he detailed regrets at the changes in the management of the Institute, which had occurred since his own retirement from many offices, feelings which, he said, were shared by other recently retired officers. He pointed out that since the affairs of the Institute were no longer under their direction, an unpicturesque sense of order had got into the place, in accordance with which letters were now answered and even filed, financial records were kept in account books, and dark rooms had become dark. He lamented the good old days and left the President to explain the situation. Mr. Thurstan Holland, in reply, said that this, he thought, would be positively his last appearance as a President. The situation in which he found himself had occurred thrice before, twice in connexion with one of the bodies composing the Institute, and once at an International gathering. Now, he said, there was nothing further left for him to do officially, unless radiological activities should be opened to those who were translated to the stars, a terrible prospect, which had been held out before them during their conferences by Prof. Eddington. In respect of the meeting just held he was justified, he said, in regarding it as a great success, as the high-class papers that had been read revealed the extending possibilities of radiology. But he pointed out that in regard to the therapeutic relation of radium to cancer, the belief that a cure for cancer had been found was unjustified, though radium was now of such immense assistance, a view that had been expressed by their distinguished guest, Prof. Gösta Forssell, in the Mackenzie Davidson Memorial Lecture.

The toast of the Guests was proposed by Major C. E. S. Phillips, who spoke of the progress of the Institute and of the early British work in radiology, in founding the first society, and issuing the first journal devoted to the subject. Prof. Eddington, in an amusing reply, described himself as a celestial astronomer, and while testifying to the value of X rays to the star doctor, said that the celestial astronomer could not get much further than the terrestrial physician—that is, he could diagnose but must leave the rest to Nature. In illustration of the part that radiological methods might play in astronomy, he said that certain dwarf stars, which formerly were ruddy had become pale, and through radiology it had been shown that this was due to an increase of internal density; and he imagined the case of a famous astronomer who announced to his wife that he had detected a star of unique density and that, to do her honour, had called it after her. Mr. Donald Armour, President of the Medical Society of London, and Dr. G. W. C. Kaye, a late President of the Institute, also replied.

The Health of the President was proposed by Prof. Gösta Forssell, and after a brief reply from Mr. Thurstan Holland, a dramatic skit, described on the programme as a "surprise item," was rendered by the author, whose name did not appear on the programme, and three colleagues.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1928 statistics of four counties :—

Name of county and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Somerset .. (405,250)	14·7	11·9*	0·75	1·66	1·3	2·2	45	18	4·4
Lancashire† .. (1,811,000)	14·6	11·9	0·75	1·38	2·0	1·9	69	29	6·1
Derbyshire‡ .. (624,100)	17·8	10·2	0·72	1·19	1·3	1·5	63	—	4·3
Essex .. .. (1,083,700)	16·3	10·0	0·75	1·39	1·2	1·8	51	23	4·0

* The standardised death-rate is 9·4.
† Population adjusted from 1,809,120 for changes of boundaries during the year.
‡ Population adjusted from 622,400 for changes of boundaries during the year.

Somerset.

Dr. W. G. Savage reports that the county was invaded by small-pox on four occasions and that in three instances there were single cases and in the other three persons in one family affected. The notifications of typhoid fever were higher than usual, 41 cases with 6 deaths. Twenty of them were associated with an outbreak at Weston-super-Mare, the cause of which was not elucidated. There was a welcome decline to 13 cases in the notifications of encephalitis lethargica, but the deaths ascribed to it numbered 9. Measles was more fatal than usual and caused 36 deaths, 29 being in children under 5 years of age. There are ten clinics for venereal diseases, and the figures show an increase, both in new cases and attendances. Seventy-nine per cent. of the new cases attended at county council clinics. Dr. Savage points out that the system of multiple clinics makes it possible for every case to obtain treatment at a reasonable distance from home and facilitates following up. As a result, patients attend until cure is effected much better than formerly. A table illustrates the considerable decline in the tuberculosis mortality during the last 20 years. Thus on the 1928 population 20 years ago there would be over 400 deaths annually, whereas in each of the last three years there have been under 300. The unused buildings at Quantock Sanatorium were again used as a holiday camp for 80 debilitated girls and boys with most satisfactory results. The tuberculosis officer, Dr. L. J. Short, states that the difficulties of exact diagnosis have been increased lately by the appearance of a form of influenzal broncho-pneumonia, which for a long time closely simulates tuberculosis and may go on to a fatal termination.

Infant mortality was lower than ever before, but Dr. Savage points out that 52 per cent. of the infant deaths took place during the first month, an illustration of the importance of prenatal work. The midwives attended 57 per cent. of the births and the medical practitioners 43 per cent., the exact converse of what took place 12 years ago. A table shows that although the maternal mortality-rate has shown considerable fluctuations since 1910, there has been no decided fall. There were two cases of impairment of vision among the 34 cases of ophthalmia neonatorum notified. In one case there was delay to notify; the onset was on Jan. 10th, and on Jan. 27th the case was sent to the Bristol Eye Infirmary. The other was a severe case admitted to Taunton Hospital five days after onset, but the mother refused to stay in hospital until treatment was completed. Antenatal cards are supplied to all the midwives and examinations of urine are made for them in the county laboratory. Leaflets are also supplied to expectant mothers. The scheme for searching out rickets, especially in the rural areas, continues satisfactorily. There were 241 cases brought under treatment and the figures show 14 per cent. cured, 24·6 per cent. practically cured, 42·1 per cent improved, and 19·3 per cent. with no visible improvement or needing transfer to the orthopædic clinic. The scheme has brought out the fact that other abnormalities, which may be confused with rickets, need special attention, and this extension of the scheme has been made possible by the appointment of Dr. Hilda Halliday as assistant medical officer in April, 1928. The orthopædic scheme dealt with 440 deformities, and Dr. Savage reports that a much larger percentage of the cases seek treatment in the early stages of crippling.

As regards pollution of rivers no trouble was experienced during the year from the effluents of milk depôts. There was a decline in house building, new houses numbering 1662, as compared with 2835 in the previous year. Dr. Savage points out, however, that only 750 houses are needed for increase of population and that the 1928 figure of 1662 does something to reduce house shortage and to enable unfit houses to be closed. Under the Rural Workers Act, £1937 was paid towards the renovation of 22 dwellings during 1928. In the matter of meat control the county council have had to draw the attention of the local authorities to the requirements of Section 8 of the regulations as much laxity has arisen with respect to the giving notice of times of slaughtering. In a number of the county areas no meat was condemned at all, and it is not difficult, says Dr. Savage, for diseased animals to be killed and unsound meat to be sold for human consumption. There is some improvement in the working of the Milk and Dairies Order, 1926, but in some districts this work receives very inadequate attention. During the year 40 clean milk demonstrations were given at various farms with an average attendance of 24. There were also four competitions for milkers and another clean milk competition. During the year 273 samples of mixed milk were examined biologically for tubercle, and six, or 2·2 per cent., gave a positive result. During 1926 and 1927 the percentages were 2·2 and 2·18, and Dr. Savage points out that the Somerset percentages compare very favourably with other parts of the country. In addition to the cases mentioned, two reports of tuberculous milk produced in Somerset were received, one from Bristol and the other from London. In the follow-up of these eight tuberculous milk samples—on five farms six cows with udder tuberculosis and one cow with considerable tuberculosis and yielding tuberculous milk were detected and destroyed, while on the other three farms no cow affecting the milk-supply could be traced.

Lancashire.

Dr. J. J. Butterworth's report contains much detailed information with respect to the sanitary needs, activities, and statistics of the 19 boroughs, 81 urban districts, and 19 rural districts which make up the administrative county. Water-supply is a difficult matter in some portions of the county and Dr. Butterworth hopes that the Local Government Act of 1929 may be helpful. A table of samples taken during the year shows that 2 out of 20 samples from public supplies were unsafe or doubtful, while of 34 supplies to single houses, 6 were definitely unfit and 12 of doubtful quality. A great part of the county comes under the jurisdiction of the Mersey and Irwell and Ribble joint committees as regards pollution, and Dr. Butterworth refers to the circular issued by the Ministry in March advising each county and county borough council to consider the advisability of

becoming a constituent member of a joint authority for the prevention of river pollution. The new houses erected numbered 6646, to be compared with 10,170 in the previous year. The Rural Workers Act has not been much utilised as only £736 was granted in respect of eight dwellings. Thirteen joint planning committees now function in the Manchester district and five in the remainder of the county. Every urban district with a population exceeding 20,000 was required to prepare a scheme before Jan. 1st, 1929, but the date has now been extended to Jan. 1st, 1934. All the 17 boroughs, and eight of the nine urban districts in the class mentioned, have taken some action in the preparations of schemes.

The complaints of tuberculous milk produced in the county received from outside authorities numbered 329. The county veterinary surgeons in each case visited the farm and examined the cattle but it is not stated what success they had in detecting the offending cow. There are 7841 cow-keepers in the county but only 11 entered for the fifth Clean Milk Competition, and there are only five licensed to produce "Certified" milk. The county analyst, Mr. G. D. Elsdon, returned 95 out of 2771 milk samples, or 3·4 per cent., as adulterated. He further shows that the average composition of all the samples, including those adulterated and appeals to the cow, was 3·74 per cent. of fat and 8·90 per cent. of solids—not fat, and that the experience of the last nine years proves that it is rare for the milk of a herd to fall below the standard of 3·0 per cent. of fat and 8·5 per cent. of solids—not fat. Thus, out of 25,474 samples 4·4 per cent. fell below the fat standard, while 2·9 per cent. fell below the solids—not fat standard. These percentages at first sight appear to be high, but when they are checked by appeals to the cow it is fairly obvious that the majority are sophisticated. Thus, out of 461 appeals to the cow only 112 fell below the fat standard and 35 below the standard for non-fatty solids.

The notifications of encephalitis lethargica have declined steadily since the peak year of 1924, when there were 299 cases and 103 deaths. In 1928 there were 74 notifications and 76 deaths. The death-rate from pulmonary tuberculosis was the lowest ever recorded in the county. The new cases of venereal disease attending the clinics show a considerable increase on preceding years. The new cases of syphilis are about the same as in 1923 but the new cases of gonorrhœa are nearly double. More than half the confinements were attended by midwives and the percentage of stillbirths to live births reported by midwives was 2·76. The damage done by ophthalmia neonatorum was exceptionally high—viz., two cases of total blindness and five of impaired vision. The county council is the local supervising authority for the whole of the administrative county, but for child welfare its area comprises 77 districts in which 10,765 of the 26,390 births in the county were registered. Little has apparently been done in the matter of antenatal clinics. The county council has established two, at Irlam and Litherland, and has made arrangements for the use of the antenatal clinics at Widnes and Chorley, but no particulars are given as to the attendances at these clinics. In addition to this the school nurses, who also act as health visitors, paid visits to 2068 expectant mothers. The county orthopædic scheme has made progress, and provided treatment for 2308 children. Many more authorities have joined and there are now 22 out-centres in addition to the six hospitals included in the scheme.

Derbyshire.

Dr. W. M. Ash's report contains many interesting features. During the year the orthopædic scheme was further developed. Clinics were opened at Bakewell, Chinley, and Shirebrook, making nine in all. The sparsely populated western area is provided for by a motor service and occasional clinics at existing buildings or by visits of the orthopædic staff to the homes. There are 55 beds at Bretby hospital for surgical tuberculosis and eight for non-tuberculous cripples. The new 50-bed block at Bretby will be opened during the present year and the plan of an additional 32-bed block for adult surgical tuberculosis which is in the early stages of erection, is given. The crippled patients treated during the year at Bretby numbered 107; 25 cases of non-tuberculous crippling and the remainder with one or more tuberculous lesions. Of the 43 patients discharged during the year the average duration of stay was 419 days for the tuberculous and 125 for the non-tuberculous. Bretby has been approved by the Board of Education as a special school. Dr. Ash is very emphatic as to the crime of leaving young children at home with an open case of tuberculosis. The Grancher system has not found favour in this country and the alternative is the removal of the advanced case from the home. This is difficult in Derbyshire because accommodation is only provided for this type of case at Chesterfield, and it is essential that institutional accommodation for advanced cases should be so situated that friends and relatives can visit the patient with the minimum of trouble and expense. A beginning has, however, been made by the opening of a six-bedded block for advanced cases at Darley Dale.

A complete system of antenatal clinics has now been established throughout the county under the direction of an obstetrician, Dr. Edith E. Stephens. There are 12 clinics, mostly held twice a month. The inspection of the various sewage works has been made more effective by the appointment, in March, 1928, of an additional sanitary inspector. The effluent samples collected during the year were classified as follows: good 245, satisfactory 239, unsatisfactory 109, and bad 149. Two vendors were fined for the sale of sausages containing boric acid. The notifications of small-pox during the last eight years have numbered 21, 228, 476, 1123, 339, 224, 474, and 609 (with no deaths) in 1928. The County Clean Milk Competition attracted 49 entrants, 14 for the class of previous prize winners, 28 for competitors who have not won prizes, and 7 for retailers in the borough of Chesterfield. The animals slaughtered under the Tuberculosis Order numbered 517, 448 with advanced and 68 with not advanced tuberculosis, and 1 not tuberculous. Of 490 milk samples examined for tubercle 77, or 15·7 per cent., gave a positive result.

The school report shows that three new schools of the "justly famous" Derbyshire type have been completed. Most attractive illustrations are given and a descriptive note by the architect, Mr. G. H. Widdows. The schools are heated by treating the whole of the floors as radiators and they might perhaps be described as garden schools built on open-air lines. A noteworthy departure was the opening of the first of the new clinics at Alfreton, a plan of which is given. This building will be used for the combined purpose of a school clinic and an infant welfare centre, and has been erected in the grounds of the council school. The increased efficiency of the dental service is illustrated by a graph comparing conservative work with extractions. In 1925 extractions bulked much more largely than conservative work, but now the two are on a par. Mr. H. P. Sutcliffe, the senior dentist, makes an interesting communication on the treatment of irregularities of dentition under the conditions found at a school clinic, and illustrates his remarks by striking photographs of casts before and after treatment.

Essex.

Dr. W. A. Bullough says that steady progress has been made with the county tuberculosis scheme. The new sanatorium at Black Notley is nearing completion and improvements carried out at the Harold Court sanatorium have been a great asset. The increasing work of nine tuberculosis care associations has made heavy calls on their funds, which have been supplemented by the county council. Since 1921 the population has increased by about 170,000, largely owing to the rapid growth of Dagenham and other areas near the metropolis. During the last eight years 13,649 houses have been built at Dagenham and a further 1151 houses are contemplated. This rapid growth has created a need for the extension

of sewerage, sewage disposal, and water-supply schemes. The advisability of concentrating sewage purification by means of valley sewers at one large efficient plant instead of having several smaller schemes has been brought forward in the case of the Roding and Ingrebourne valleys. The South Essex Waterworks Company, which had to supply a population of 244,350 in 1922, now has to supply a population of 350,000. They are obtaining additional water from the river Stour and providing a 37-mile aqueduct from Langham to Ilford. It is hoped that authorities in the "waterless" part of Essex will take advantage of the facilities provided by this aqueduct. Under the Housing (Rural Workers) Act, 1926, grants during the year amounting to £3015 have been made in respect of 35 cottages. Up to December, 1928, 60 Essex cottages had been reconditioned under this Act.

The county analyst, Dr. Bernard J. Dyer, reports that 103 out of 1604 milk samples were unsatisfactory; 44 showed evidence of added water varying from 4 per cent. to 34 per cent.; 53 were deficient in fat, varying in extent from 5 per cent. to 45 per cent., and five samples contained annatto. Instruction in the production of clean milk has been energetically prosecuted. Essex won the Stapleton Cup in the inter-County Clean Milk Competition, held by the British Dairy Farmers Association. Routine inspection of cows by veterinary surgeons has made no progress. Of 84 samples of milk examined for tubercle 6, or 7 per cent., gave a positive result. In the follow-up of 11 "outside" complaints of tuberculous milk, four cows at four farms were dealt with under the Order; at five farms there was no evidence of disease, and at two farms the whole of the herds had been sold by public auction.

Much is hoped from the deliberations of the departmental committee which is considering the very strong report made by Mr. J. C. Dawes, Inspector of the Ministry, as to the nuisance caused by the dumping of London's refuse in Essex. Suspicion has been thrown on Brightlingsea oysters for causing typhoid fever in one case and dysentery in another. The Fishmongers Company have stopped the sale of Brightlingsea oysters in London. Mosquito control work goes on satisfactorily at Frinton-on-Sea and Walton-on-Naze. In September the medical officer of health of Chingford reported malaria in a boy of 8 years, who had stayed with his family at Walton. Investigation revealed seven cases of indigenous malaria (three of whom had suffered from malaria some years previously) in houses close to that in which the Chingford family stayed. At the back of the last-named house is an orchard and farm where *Anopheles maculipennis* has been found in both larval and adult stages. It is suggested that one or other of the patients who had formerly suffered had a relapse and infected the mosquitoes, which caused the indigenous cases.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 30TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 198 (last week 279); scarlet fever, 3311; diphtheria, 1807; enteric fever, 55; pneumonia, 1272; puerperal fever, 52; puerperal pyrexia, 109; cerebro-spinal fever, 8; acute poliomyelitis, 11; acute polio-encephalitis, 3; encephalitis lethargica, 14; continued fever, 1; dysentery, 8; ophthalmia neonatorum, 87. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Dec. 3rd–4th was as follows: Small-pox, 308 under treatment, 10 under observation (last week 319 and 8 respectively); scarlet fever, 2813; diphtheria, 2725; enteric fever, 82; measles, 425; whooping-cough, 110; puerperal fever, 32 (plus 18 babies); encephalitis lethargica, 125; poliomyelitis, 7; "other diseases," 12. At St. Margaret's Hospital there were 7 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London there was 1 death from small-pox, 3 (1) from enteric fever, 26 (7) from measles, 8 (2) from scarlet fever, 22 (3) from whooping-cough, 47 (10) from diphtheria, 81 (15) from diarrhœa and enteritis under two years, and 56 (11) from influenza. The figures in parentheses are those for London itself.

The death provisionally classified to small-pox was assigned to Poplar; it was, we understand, that of a premature baby. The deaths from enteric fever outside London were reported from Manchester and Gateshead. Diarrhœa accounted for 15 deaths at Liverpool, 8 at Salford, and 5 at Birmingham. Wigan reported 5 deaths from measles, Stoke-on-Trent and Manchester each 3. Bradford reported 4 deaths from whooping-cough, Liverpool 3. Liverpool also reported 6 deaths from diphtheria and Hull 4.

The number of stillbirths notified during the week was 253 (corresponding to a rate of 43 per 1000 births), including 39 in London.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Ideal Mental Hospital.

THE General Board of Control for Scotland claims to possess the ideal mental hospital at the Edinburgh District Asylum, Bangour Village. This institution lacks only one equipment, which is represented by the solarium in course of erection at Govan District Asylum. Scotland still retains the old word "asylum" which England has discarded on account of its unfortunate associations. In its original meaning of "refuge" or "a place where you cannot be robbed" no word could better denote the haven needed and often eagerly sought by those mentally disordered, but it has undoubtedly come to suggest to the uninstructed a dreary prison for maniacs where treatment is harsh and even fair play is rare. It is no doubt a matter for argument whether the best procedure is to change the name in order to disarm mistrust or so to insist on the true nature of the institutions thus called that the name loses its associations of horror. Whatever the name, there is no doubt that the modern mental home is approximating rapidly to the ordinary hospital. As the Scottish commissioners remark, "it is now more than twenty years since it was clearly demonstrated that only a negligible number of the mentally affected, whether on admission for the first time or as the result of an exacerbation of a former mental disorder, cannot be treated under the same conditions as obtain in general hospitals." Their idea of the ideal hospital includes every kind of equipment for diagnosis and treatment. If there are 500 beds or more there should, they say, be an X ray apparatus, and smaller hospitals should have access to the radiological installation of some neighbouring institution. To control the radiological department there must be a medical officer with special training and experience, and on this official will also depend the conduct of electrical therapy, hydrotherapy, and light therapy, as well as massage—therapeutic agents which are becoming general in all large mental institutions. The Edinburgh district asylum has, of course, an operating theatre, an occupational therapy department, an energetic laboratory, and an abundant supply of literature through its library. It has recently added to its visiting staff a chiropodist—a specialist who must be almost unique at present. A well-equipped dental room and a visiting dentist are, of course, essential in a good mental hospital, and consultants in each of the special branches should also be available. A constant source of anxiety to the medical superintendent is the insane carrier of dysentery and enteric Before they are detected these patients—usually

women—spread the disease far and wide. Scotland has dealt with this problem by providing a special detached hospital large enough to accommodate carriers from the mental hospitals all over the country. This excellent provision is due to the wisdom of the Govan District Board of Control. The hospital has been planned on the most modern and generous lines and provides every comfort for the patients who are so unfortunate as to require segregation for this reason. Scotland was a pioneer in offering a solution of the problem of laboratory work in the smaller institutions. Nearly 20 years ago the Scottish Western Asylums joined together in the foundation of a research institute, with a central laboratory in Glasgow, to undertake the routine examinations and carry out research on behalf of a number of mental hospitals. The nineteenth annual report, just published,[1] shows that this excellent scheme is in financial difficulties but convinced of the importance of carrying on its work. The investigation of intestinal flora and the laboratory work connected with the malarial treatment of general paralysis would be almost impossible for the individual asylums, and the Institute hopes also to be able to initiate research into the problems of mental disease. An important feature of the Edinburgh institution, considered as the "ideal," is the high proportion of voluntary inmates. Nobody interested in the mental health of the nation can rest content until patients are admitted freely on a voluntary basis to every mental hospital in these islands.

A Hospital Waiting-list.

The size of the Edinburgh Royal Infirmary waiting-list has resulted in an agitation for more beds. At a meeting of the League of Subscribers, Sir David Wallace, representing the managers, made an analysis which showed that the waiting-list of 3009 (on Nov. 1st) was somewhat inflated, but with every correction the number of surgical cases requiring admission is still serious.

During the last year the infirmary dealt with 19,800 cases: 4000 medical and 14,200 surgical. The out-departments handled 67,623 cases, an increase of 5538 over the preceding year. The ordinary income was £114,896; the extra-ordinary income, £139,382; total, £254,278. This was far beyond any previous year, largely on account of legacies and donations. The ordinary expenditure was £143,684; the extra-ordinary, £18,612; total, £162,296, leaving a balance with the general fund of £91,962.

Ten years ago, said Sir David, in-patients numbered 4056 medical and 8443 surgical. The total of medical cases was still about the same, but the surgical ones had increased by 6000. The size of the waiting-list was partly due to increasing willingness to go to hospital for operation. Practically every patient now wished to go to hospital. Out of 1668 surgical cases waiting, 738 no longer required treatment, either because they could not be traced or because they had recovered. A considerable number were in special departments, thus in the present list 518 waited admission to the ear and throat department despite its enlargement three years ago. It could be stated, however, that no urgent cases, emergency or other, were refused admission. In the majority of the cases put on the waiting-list a little delay was not deleterious to the patient. But emergency cases were so numerous that waiting cases were often delayed for a "good long time."

The new Radium Institute—the first for Scotland—was to be an integral part of the infirmary; and if the contemplated plans were carried out it would mean an increase of 36 beds. The new Cripples' Hospital at Fairmilehead would also afford some relief, and pressure on voluntary hospital beds would be reduced by coöperation with the new health authorities. He was convinced that real injury, mental or physical, to the waiting patients was much less than might be supposed. The managers were doing everything they could to get patients in at an earlier period.

[1] Nineteenth Annual Report of the Scottish Western Asylums' Research Institute. 1928. Coatbridge: Alex. Pettigrew, Ltd.

The meeting thanked Sir David for his address, but felt that something more practical was required from the managers, who should not underestimate the feelings that lay behind the motion. If nothing was done, the subscribers would lose confidence in an institution which they had so generously supported. It was intimated that £21,564 had been gathered from 1410 groups of League subscribers, an increase of £129 over last year. Of this sum, greater Edinburgh was responsible for £15,942; country districts for £5622.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Road Accidents and Hospital Finance.

THE hospitals of Dublin, like those of other cities, have suffered from the increasing burden of gratuitous attendance on the victims of road accidents. This is an aspect of the results of modern road traffic which should not be overlooked in the discussion of compulsory insurance against third-party risks. Mr. A. B. Clery, assistant surgeon to the House of Industry Hospitals, Dublin, discussed the subject in an interesting address delivered last week to the Dublin Rotary Club. He pointed out that the treatment given by the hospitals diminished the liability of those responsible for the accident, and it was unjust that the hospitals should be expected to do this work for nothing. The loss incurred in this way had to be made good from moneys intended for the relief of the sick poor. Even if the injured party were awarded damages to cover hospital expenses, the money did not always reach the hospital. Mr. Clery stated that in our hospitals in Dublin 42 interne cases of road accident had been treated since Jan. 1st, involving an expense of £465, while the receipts on account of these cases was only £82. He estimated that the Dublin hospitals lost annually between £3800 and £4000 by their care of cases of road accident treated in the hospitals, without taking account of the large number treated in the externe departments. As the number of road accidents was increasing enormously the problem of safeguarding funds intended for the relief of the sick poor was becoming more urgent. Speaking on a vote of thanks to Mr. Clery, Mr. Henry Stokes, surgeon to the Meath Hospital, said that the care of the victims of a single 'bus accident which occurred last summer had already cost his hospital £300, for which they would not receive a penny.

An Electrotherapeutic Clinic in Dublin.

The Joint Committee in Ireland of the British Red Cross and the Order of St. John of Jerusalem established in Dublin an electrotherapeutic clinic for ex-Service men. There is no longer a need for it for this class, and the committee has now decided to open it for the use of patients of small means. A circular letter has been issued to the medical profession of Dublin inviting them to make use of the clinic in suitable cases. No patient will be received unless recommended by his own medical attendant, and medical men are requested only to send patients who are unable to pay the usual private fees. The clinic is in charge of a certificated nurse, experienced in such work, and it is equipped to provide massage, remedial exercises, electric treatment, radiant heat, ultra-violet light, and diathermy. It has a useful function to perform.

Mass Effect of Goitre.

At a meeting of the Ulster Medical Society on Nov. 28th Mr. Howard Stevenson, the President, introduced Dr. A. Murray Drennan, the newly appointed professor of pathology in the Queen's University of Belfast, who read a paper on Some Aspects of Goitre: the Mass Effect. Prof. Drennan based his remarks on work done by himself and his former colleagues at the University of Otago, New

Zealand, in which observations of the histological appearances of the thyroid gland in health and disease were correlated with the clinical history, with the gross bulk of the gland, and with estimations of its iodine content. He demonstrated by diagrams and a large number of lantern slides of microscopical sections the various histological appearances of the gland, and observed that the changes considered to be characteristic of the different types of goitre could be found in the post-mortem room in glands of normal size, where there was no history of symptoms. He then proceeded to show the effect of diminished iodine intake, which led to increase in size, but to a lower pressure of iodine, succeeded, if iodine were administered, by a colloid toxic goitre, provided the mass of gland were sufficient. If the gland was in a diffuse secretory stage with increase of its smaller vesicles, the typical appearances of exophthalmic goitre might arise; in this case administration of iodine enabled the gland to revert to a storage state. He emphasised the complexities of the thyroid problem, amongst these being the extraordinary number of secondary changes, such as hæmorrhage, fibrosis, and atrophy which complicated the clinical findings.

In the discussion which followed, Dr. Olsen said that as a co-worker of Marine in America he had followed the work of the Otago school with interest. He expressed the view that the different forms of goitre were not so sharply separated as had been thought; he was of the opinion, however, that true exophthalmic goitre should not be treated surgically, while obvious adenomata should be operated on.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Vasoligature Deemed Assault.

A WEEK or two ago there was a very remarkable trial in Graz, the second university city of Austria. A surgeon of good reputation was accused of causing bodily harm to a large number of men by performing on them an operation which, as the court believed, had the effect of sterilising them permanently. It appeared that a prisoner, when examined before starting a term of hard labour, showed on his scrotum scars from an operation which he explained he had had done with the object of becoming sterile. In his native town, he said, a large number of men had applied to a surgeon named Schmerz for the same purpose, and had obtained the desired result. In the course of the proceedings it was stated that more than 700 men had been operated upon by Dr. Schmerz in the last two years. The court regarded this wholesale sterilisation as a danger to public welfare, and although the accused said that his operation was only a temporary sterilisation and could (so to speak) be undone at any time, and that he always took care to operate only in cases where definite social or medical indications were present, he was found guilty of gross offence. In vain the witnesses and medical experts whom he called gave their evidence for him. In vain it was asserted that the method was perfectly free from any danger in the hands of this excellent surgeon, and that in view of the frequency and danger of abortion vasoligature was desirable where prevention of issue was necessary. Despite these pleas the learned judge found the doctor guilty, and as he could not deal with the offence under any other heading, he turned to an old law of 1858 which applies to injuries inflicted by assault or attack, and sentenced the accused to a fine of 15,000 Austrian shillings (about £450) or two weeks' imprisonment. Naturally this sentence will not be left without appeal. Public opinion has been seriously disturbed, and comments, both professional and lay, are not very complimentary to this way of administering law. It must be added that a certain number of medical men disapprove of Dr. Schmerz's procedure, and hold that the judge's opinion was correct. At any rate, the case will be brought once more before a jury, for otherwise every surgical interference might be regarded in the same light, and every surgeon would run the risk of heavy fines for fulfilling his professional duties.

The Gerson Diet in Tuberculosis.

The treatment of tuberculosis by means of a diet free from common salt continues to be in the foreground of medical discussion. This new treatment, as applied first by Dr. Gerson and later by Prof. Sauerbruch on a large scale,[1] has given excellent results in their hands, but has also been attacked from several quarters. Accordingly a group of eminent Viennese professors was sent to Sauerbruch's clinic at Berlin to investigate the actual conditions of treatment. The commission consisted of Dr. Durig, a physiologist; Dr. Eiselsberg, a well-known surgeon; Dr. W. Neumann and Dr. Löwenstein, specialists in tuberculosis; Dr. Volk, well known for his researches on skin diseases; and Dr. Walzel, also a special surgeon. These men had every opportunity of studying the work in Berlin, and could compare the state of patients before and after treatment by the new diet. Clinical and photographic records were examined, and the commission got a distinct impression that at least in surgical and dermatological cases the diet led to marked improvement. A sine qua non is strict and conscientious adherence to the absolutely salt-free diet—a very trying task both for the patients and the medical and nursing staff. It is not unlikely that some of the bad results obtained at several other centres have been due to neglect of this point. The investigators on their return to Vienna strongly recommended that the method should be tried here, and on this recommendation the Red Cross of Austria has volunteered to place at the disposal of the University of Vienna its tuberculosis sanatorium at Grimmensteinn, 60 miles away, where there is every opportunity for enforcing the necessary diet. Furthermore, at another place much nearer Vienna the same experimental observations will be started. The chief drawback of this useful method is the craving for salt, which soon sets in and somewhat torments the patients. A suitable change in the otherwise fairly uniform diet is therefore of the utmost importance. It may be added here that since Dr. Gerson's first publication of his diet, Dr. Max Jerusalem, a surgeon of the workmen's sickness insurance club, has treated quite a number of patients on these lines, and is satisfied that they represent a real advance in the therapy of tuberculosis of the bones and the joints.

Cutaneous Immunisation.

In view of the difficulty of getting parents to consent to injection of toxin-antitoxin for prevention of diphtheria, Prof. Löwenstein has tried combining the two substances in an ointment which is rubbed into the skin. After prolonged trials by Dr. Poindecker in a children's hospital, the ointment was found to give excellent results in 68 to 70 per cent. of cases, and accordingly it will now be used in all the municipal kindergartens. The parents will be handed a pamphlet with complete explanations, and it is expected that no difficulty will be experienced. The health authorities hope soon to eradicate by these means this dangerous disease at least amongst the youngest children. The ointment is rubbed in over the sternum in intervals of 8 to 14 days.

During the summer term of 1929 the number of medical students who proceeded to the M.D. degree was 126. Of these 63, or exactly half, were of foreign nationality, and it is clear that this high percentage of foreign students is of utmost importance to our University.

Dr. J. Rosmanit, who died recently, was a surgeon and physician of the old type, and though his work was never in the limelight it was none the less important. He was the inventor of the widely used railway first-aid apparatus, and served as the chief staff doctor of the Austrian State railways. During the war he contributed many useful suggestions concerning the methods of transport of the wounded and sick.

[1] See THE LANCET, August 24th, p. 404, and Sept. 21st, p. 617.

Correspondence.

"Audi alteram partem."

THE MEDICAL AND DENTAL REGISTERS.

To the Editor of THE LANCET.

SIR,—In order to facilitate the work of those who find it essential to know whether a practitioner is legally qualified or not—such, for instance, as officials of insurance committees, chemists and druggists—the Council are continuing to publish an office edition of the Medical Register. This edition is bound in paper boards and contains all names and addresses as they appear in the official edition but is printed on cheaper paper and without the preliminary matter. The office edition is published at the special rate of 7*s.* 6*d.* post free, but no copies can be issued at this price unless they are ordered and paid for prior to Dec. 31st of the year preceding that of publication. Order forms will be sent on request. The Council also issue each month lists of new registrations and names deleted from the Register. These are issued on a written understanding that the lists are for the personal use of the firm to which they are supplied, that they are not communicated to any other person, and that they are not sent out from the office in order to have stencils made. Every possible care is taken to protect subscribers from the lists being made use of by others. I might add that these lists are for obvious reasons not supplied to any addressing agency; the Council has no business arrangement or agreement of any kind with any addressing agency for supplying to them any official information and it certainly has no exclusive arrangement of this kind.

Similarly the Dental Board of the United Kingdom issue an office edition of the Dentists Register which includes the names of all registered dentists together with a local list. The price of this is 4*s.* post free, provided copies are ordered and paid for prior to Dec. 31st of the year preceding that of publication. Monthly lists of new registrations and deletions are also issued by the Board. I might add that the General Medical Council and the Dental Board are always glad to answer inquiries as to whether practitioners are registered or not. Preferably these should be in writing to prevent misunderstanding but inquiries by telephone are replied to at once.

I am, Sir, yours faithfully,

NORMAN C. KING,
Registrar.

General Council of Medical Education and Registration of the United Kingdom, 44, Hallam-street, London, W. 1, Dec. 4th, 1929.

THE CRAFT OF SURGERY.

To the Editor of THE LANCET.

SIR,—Prof. Tonks touches upon a subject which I have repeatedly emphasised in discussions on hospital training. He very rightly points out that the dental branch of surgery is the only one in which any attempt is made to instil craftsmanship in the student, and that this teaching is of great value is well demonstrated in those hospitals where there are combined medical and dental schools. It is common knowledge in such hospitals that when dental surgeons pass into the wards to complete their medical training they usually make good dressers, and not infrequently upon completion of their training secure surgical appointments. That the value of craftsmanship is not sufficiently appreciated by the examining bodies is shown by the recent dental curriculum of the London University degree in dental surgery, where the standard of prosthetic dentistry is lower than that of the L.D.S., whereas the standard of the more academic subjects is considerably higher.

This gradual tendency to exclude the teaching of craft in favour of more theoretical subjects is certainly distressing, and in my opinion a course of craftsmanship should be made compulsory with students intending to take a higher course in surgery. As Prof. Tonks emphasises, the capable surgeon is usually made, not born, and unless an apprenticeship is served in the use of the hands and tools one cannot expect students to attain that dexterity and skill in operating which is so necessary and vital to their success. It is sometimes almost a painful sight to watch a young surgeon using a saw or chisel, being obviously unfamiliar with the tool, and there is no doubt that a little more teaching of the fundamental use of instruments would increase his confidence and skill, to the great help of both himself and his patient.

I am, Sir, yours faithfully,

W. KELSEY FRY, M.R.C.S., L.D.S.

St. Thomas's-street, S.E., Dec. 4th, 1929.

THE POSITION OF PUBLIC VACCINATORS.

To the Editor of THE LANCET.

SIR,—On behalf of the Councils of the Poor-law Medical Officers' Association, and the Public Vaccinators' Association, I am desired to appeal, through your columns, to all public vaccinators and Poor-law medical officers, who are also members of the local authority to which they will be transferred on April 1st next, to communicate with me at once, if they have not already done so, giving such particulars as may be useful in framing representations to the central authority on their behalf.

I am, Sir, yours faithfully,

ALBERT ERNEST COPE, M.D.,
President of the Public Vaccinators' Association;
Secretary of the Poor-law Medical Officers' Association.

Belgrave-road, Westminster, S.W., Dec. 7th, 1929.

CLINICS FOR RHEUMATIC CHILDREN.

To the Editor of THE LANCET.

SIR,—Dr. Burnet's plea for the establishment of special clinics for the supervision of rheumatic children needs no endorsement from me, but I may perhaps be allowed to say that his ideals are by no means as "premature" as he seems to think. There are already about a dozen such clinics at work in the London area, and many more scattered in the big cities of England and Scotland, and at least one in Ireland. I do not attempt to enumerate them lest I should leave out some unknown to me. Only last month did I hear of a new one to be opened shortly at Hull; and so the good work spreads. In many instances these clinics have adopted the plan which I think is best—namely, they are attached to a children's hospital, using its personnel and premises, and having ready access to every in- and out-patient department.

I concur with Dr. Burnet that these clinics should incorporate the word "rheumatism" in their title, and regard this as of great importance to the preventive aspect of the work. In London many of the clinics are called "rheumatism supervisory centres."

I have sometimes been betrayed into passing criticisms on the school medical service, but this rôle I see I can advantageously leave to Dr. Burnet. Perhaps, were its work boomed a little less vigorously, he would see that it does not cover the ground he expects of it. Official inspections at very long intervals are not going to do the work of careful and frequent examinations, and they are quite insufficient to pick out all early cases of rheumatism. There is, I am told, a schedule of disorders on which the school medical officer works, to the detriment of the child who has not the civic sense to ail *à la carte*, and I doubt if we are right in expecting him to come to real grips with the intricacies of clinical medicine. But I cannot in fairness close without testifying to the great value of the special schools for physically defective children, where many heart cases do phenomenally well. For myself I would say that the best régime in the long run for rheumatic children with heart

disease is to live at home, attend a school for physical defectives, and be periodically examined at a centre at a children's hospital.

I am, Sir, yours faithfully,

REGINALD MILLER, M.D., F.R.C.P.

Harley-street, W., Dec. 7th, 1929.

To the Editor of THE LANCET.

SIR,—As a comment on Dr. Burnet's letter, I may perhaps be allowed to furnish a short account of our experience in Bristol. It is about six years since our colleagues in the school medical service began to refer to Dr. C. E. K. Herapath and myself selected cases of doubtful or early cardiac disease discovered in the course of their routine medical inspections. These children we saw in our out-patient rooms and then reported as to their fitness to attend school, need for treatment, and so on. Between two and three years ago this plan was stabilised and extended by agreement between the various local authorities concerned on the one hand and certain hospital physicians on the other—a step which was promoted by the Cardiac Subcommittee of the Science Committee of the British Medical Association and assisted by the Medical Research Council—and since that time it has operated smoothly over an area of three counties.

We trust that this work will afford a basis of data broad enough for conclusions as to means of prevention of rheumatic carditis, while at the same time we are convinced that good is already being done in bringing these children under medical care earlier, and over longer periods, than formerly. We think, moreover, that we have gained valuable experience in harmonious coöperation with our colleagues—those of the whole-time services on the one hand, and the family practitioners on the other. It would be foolish to pretend that no difficulties have arisen, but so far it has proved possible, by relying on the goodwill of everyone concerned, to overcome all these.

Valuable work of the same kind is also being done in London, Birmingham, Glasgow, and elsewhere. Those who are interested in tracing the progress of the whole movement will find some account of it in recent annual reports by the chief medical officer to the Board of Education.

I am, Sir, yours faithfully,

CAREY F. COOMBS.

University Centre of Cardiac Research, General Hospital, Bristol, Dec. 9th, 1929.

THE ACUTE VULVITIS OF LITTLE GIRLS.

IS IT GONORRHŒAL ?

To the Editor of THE LANCET.

SIR,—In the contribution by Dr. H. C. Cameron in your issue of Nov. 23rd (p. 1115) several questions are raised which I feel require an answer. Dr. Cameron suggests that acute vulvitis in children may not be caused by the diplococcus found in adult infections. The following analysis, in my view, strongly supports the general belief that the organism in the two conditions is identical.

Among 47 consecutive cases of gonococcal vulvo-vaginitis in children (bacteriologically confirmed) treated at the V.D. clinic of Guy's Hospital, the infection in 20 cases (42·5 per cent.) was found to be present in one or other parent, although in some of the cases the parents denied symptoms. In one case, transferred from a ward where there was an epidemic of vulvo-vaginitis, no evidence of infection could be found in the parents. In 26 cases (54·5 per cent.) the examination of parents was either impossible or bacteriological reports were inconclusive, although clinical examination revealed extremely suspicious evidence. Among these 26 cases four were associated with the epidemic already mentioned.

Whilst presenting these figures I do not for a moment deny the well-known fact that organisms other than the gonococcus—for example, *B. coli*, the streptococcus, *Micrococcus catarrhalis*, &c.—are frequently the cause of vaginal discharge in children and adults. Such cases after thorough investigation are discharged from the V.D. clinic as not venereal.

Dr. Cameron suggests that the epidemic is kept up by the anxiety of those concerned in combating it and dies down only when their activities cease from exhaustion. I maintain that it is arrested by the isolation and treatment of affected cases and the strict enforcement of rules. Since improved preventive regulations have been carried out there has been no spread of gonococcal vulvo-vaginitis in the wards of Guy's Hospital.

The assumption that only local treatment is given by medical officers in charge of V.D. clinics is not justified. The general condition of children suffering from gonococcal vulvo-vaginitis is not ignored in these clinics and measures designed to promote the general health are taken. In these cases the children generally show marked improvement in general condition and when judiciously handled do not show signs of nervous upset.

At the Children's Home, Waddon, where there are 37 beds for venereal disease, marked improvement in general health and gain in weight is the general rule, although local treatment is carried out daily in almost every case. Many cases of apparent recovery, under general and local treatment, are still found to be positive to bacteriological tests, sometimes months after all symptoms have disappeared. Also contacts with no symptoms are frequently found to be infected. These cases I consider to be carriers, comparable to those apparently well after general treatment only. It would be important to know the incidence of untraced infections due to this type of case. As to the question of ophthalmia, does Dr. Cameron consider it a common occurrence in adults ? I confess to have seen a case in adult or child only very rarely, excluding, of course, ophthalmia neonatorum.

I consider that gonococcal infection in children is not the trivial condition which Dr. Cameron appears to imply, and that general treatment only is insufficient to effect a cure.

I am, Sir, yours faithfully,

MORNA RAWLINS.

Devonshire-place, W., Dec. 5th, 1929.

SUGAR IN ASTHMA.

To the Editor of THE LANCET.

SIR,—In his interesting article last week (p. 1187) on Asthma in Children Dr. A. A. Osman says that as far as his experience goes "sugar is without value in the treatment of asthma in adults." May I say that only last summer a gentleman, aged 70, whom I have known many years told me that he was recently cured of asthma by eating honey for a short time, especially from the lime tree.

I am, Sir, yours faithfully,

R. HENSLOWE WELLINGTON.

London, Dec. 9th, 1929.

SHEFFIELD HOSPITALS.—According to the 131st annual report of Sheffield Royal Infirmary 6810 in-patients were treated to a conclusion, an increase of 573; they cost £2 4*s*. 1*d*. per week. The pressure upon the out-patient department may be gauged by the fact that 27,355 persons were treated in the casualty department section. A new block is being provided which will contain casualty, massage, dermatological, and dental departments, an accident theatre, pathological, physiological, and biochemical laboratories. Last year marked the completion of 50 years' work of the Jessop Hospital for Women. The average stay of maternity patients was a small fraction in excess of 12 days; the puerperal sepsis patients, on the other hand, remained for an average of 23 days. In the absence of the money needed to provide research laboratories, especially for puerperal sepsis, it was hoped to convert some existing rooms for this purpose.

Obituary.

PHILIP HEDGELAND ROSS.

THE many friends of the late Dr. P. H. Ross who have heard with regret of his passing, will agree with the writer, who knew him nigh on 30 years, that the brief notices of his death announced in the newspapers in England, East Africa, and possibly in New Zealand cannot be deemed sufficient. The good work done by Ross, notably during the years he was in East Africa, whence the writer has but recently returned, deserves to be chronicled.

Ross was born in Christchurch, New Zealand, on July 4th, 1876. He was educated at Christchurch, Otago University, and at St. Bartholomew's Hospital, London. He became qualified in England M.R.C.S. Eng. and L.R.C.P. Lond., 1900; D.P.H. Cambridge, 1902. He held the Certificate of the London School of Tropical Medicine and won the Cragg's Research Prize, 1905. He gained the distinction of being elected Foreign Corresponding Member of the Société de Pathologie Exotique, Paris.

His research work dealt with the transmission of trypanosomiasis by various species of *Glossina* and of African relapsing fever by *Ornithodorus moubata*. Ross and Milne were the first to record human spirochætosis in Uganda. Ross was the first to discover the occurrence of piroplasmosis in monkeys (*Cercopithecus*), he described the parasites accurately, but did not figure them, he gave temperature charts, &c., of the infected monkeys which came from the Kikuyu District, Kenya. [Nuttall (Parasitology, 1908, i., 139), who studied Ross's preparations, gives the name of the species as *Piroplasma pitheci*, P. H. Ross, 1905, finding that its development in the peripheral blood (illustrated) is similar to that of *P. canis*, *P. bovis*, &c.]

His official work related less to research than to practical issues. In 1903 he was appointed to the East African Medical Service, and soon after became Government Bacteriologist to the East Africa and Uganda Protectorates, doing highly efficient work at Nairobi which led to his being made the first Director of Laboratories in East Africa. During the outbreak of plague in Nairobi in 1905 his services were so highly appreciated that he received the personal thanks of the Secretary of State. In March, 1916, he became Honorary Adviser to the Director of Medical Services in East Africa and undertook all the laboratory work for the Military Hospitals in Nairobi. Here he did great service in combating bacterial dysentery, being assisted by Dr. Kauntze; the death-rate due to this disease had been 40 per cent. After much work he prepared a carbolised polyvalent vaccine (from untreated cultures) which caused the death-rate to fall quickly to less than 5 per cent.

He wrote on June 25th, 1917, to his late mother: "We started trying it on Sept. 1st, and the first three months' results were so good that Kauntze suggested trying to inoculate the healthy carriers (of Carrier Corps) to stop them getting dysentery. It meant a fearsome amount of work, as Pillay [his Indian assistant] and I were then alone, and had seven hospitals to work (about a thousand examinations a month) and vaccine lymph to prepare and issue at the rate of 1,800,000 doses per year. But I just managed to keep the carriers supplied, though it was a very close thing. I had cabled the Crown Agents for material essential for making of culture broths, and there was delay in getting it. I borrowed from the vets., got the D.M.G. to send me material from German East Africa, and the Governor to borrow all that the Uganda Government possessed, and was down to the last bottle when a parcel-post arrived with 20 pounds worth. So now I am turning the stuff out by the bucketful and have at last persuaded the medical authorities at Dar-es-Salaam to give it a trial in their hospitals. . . . It [the vaccine] is certainly a good thing for treatment, and I hope will prove equally effective as a prophylactic. When I can get figures from the military they will prove or disprove its utility. I got the doctor of the King's African Rifles to do 7000 inoculations in a camp where they were badly troubled with dysentery, and he had only three cases afterwards, of whom one was found to have escaped inoculation."

Owing to failing health he was invalided out of the East African Service, and in April, 1919, with his wife and son returned to Christchurch, N.Z. He came again to England in June, 1926. He died unexpectedly of pancreatitis on August 6th, 1929, at Sherborne, after but a day's illness. He left a widow and one son, now a student at Corpus Christi College, Cambridge.

The following is a list of Ross's published papers:—

Ross, P. H., and Milne, A. D.: Tick Fever, Brit. Med. Jour. 1904, ii., 1453. Ross: A Note on the Natural Occurrence of Piroplasmosis in the Monkey, Jour. Hygiene, 1905, v., 18–23. Ross and Hodges, A. D. P.: Notes on a Case of Spirillum Fever in Uganda, Brit Med. Jour., 1905, i., 713–15. Ross: Tick Fever, Jour. Trop. Med., 1906, i., 65–69. Report on Experiments to Ascertain the Ability of Tsetse-flies to Convey *Trypanosoma gambiense*, &c., Roy. Soc. Rep. Sleeping Sickness Commission, 1907, viii., 80–85. Article Tick Fever in Allbutt's System of Medicine, 1907, ii., pt. 2., pp. 301–306. Some Experiments with Vaccine prepared according to the Method of Achalme and Marie Phisalix, Bull. Soc. Pathol. Exot., 1911, iv., 283–86. Spirillosis, Nairobi Laboratory Reports, 1911, pp. 6–12. Human Spirochætosis; syn. African Relapsing Fever, Human Tick Fever, Transvaal Med. Jour., 1911–12, vii., 125–29. Poisonous Insects of South Africa, New Zealand Med. Jour., 1912–13, xi., 176–91. A Further Experiment with Vaccine, prepared according to the Method of Achalme-Phisalix, Bull. Soc. Path. Exot., 1913, vi., 144. Ross and Shircore, J. O., Epidemic Cerebro-spinal Meningitis in Nairobi, British East Africa, Trans. Soc. Trop. Med. and Hyg., 1913–14, vii., 83–95. Ross, Gózony, L., and Hindle, E.: Serological Tests. I. On the Persistence of Precipitins in Sera Stored in Vitrol II. On the Reaction obtained with (*a*) Complement-fixation Tests, and (*b*) Precipitin Tests, with the Gut Contents of Blood-sucking Arthropods, Jour. Hygiene, 1914, xiv., 354–59. Ross: Dermatitis due to the Secretion of a Beetle in British East Africa, Jour. Trop. Med. and Hyg., 1916, xix., 202. Ross and Kauntze, W. H.: The Use of Polyvalent Vaccine in Dysentery, THE LANCET, 1917, i., 965. Ross: Some Observations on Malaria and Helminthiasis in Central Kavirondo Reserve adjoining Kisumu, Kenya and East Africa Med. Jour., 1929, v. 367–74.

The published work affords but slight evidence of Ross's industry and efficiency, since most of his time in Africa was occupied in the routine work of preparing vaccines for plague and dysentery on an extensive scale in connexion with epidemics and in dealing with numerous practical problems.

All who knew Philip Ross will recall his genial personality, his never-failing interest in helping others over difficulties, and the devotion he showed to the work in his domain. In East Africa he gave devoted service to mankind.

G. H. F. N.

JOHN SCOTT RIDDELL, M.V.O., O.B.E., M.B., LL.D. ABERD.

Mr. Scott Riddell, who died on Dec. 5th at the age of 65, was one of the best-known surgeons of his generation in the north of Scotland. Some years ago he retired from active practice, but his time was very much occupied by public duties. He was General Council Assessor on the Aberdeen University Court, University representative on the City of Aberdeen Territorial Association, and chairman of the Joint (Disablement) Committee of the North of Scotland under the Ministry of Pensions. He also served for some years as chairman of the Managers of the Royal Infirmary. He had the temperament that made these duties a pleasure and, when a man was needed for such a position, his name always sprang to the lips. In his latter years he had to fight against a chronic disablement, but this never affected the liveliness of his interest, the readiness of his activity in public causes, or the quality of his advice in council.

In the real sense a man of action, Riddell's capacity for action was broadly based in sound scholarship both general and professional. After a long apprenticeship in classics he graduated in medicine in 1888, and soon showed a strong disposition to surgery. For seven years he acted as assistant professor of surgery when Sir Alexander Ogston was the professor. To those that began their surgery

under Ogston the thoroughness of the discipline implied by those seven years needs no comment, and Riddell profited to the full by the association. He became not merely a good teacher but a skilled diagnostician and operator. He passed on to the staff of the Royal Infirmary and, in due course, became one of the consultant surgeons. His enthusiasm and lucidity in exposition made him a first-class clinical teacher and he developed a very large operative practice. He was a breezy, active, eloquent man and whatever he took up was sure to succeed. He was ready to argue and discuss with forcefulness, but always in good temper. In a word, he was a general favourite wherever he went and the professional men knew that his work was reliable. In his early days, and for many years, he conducted classes in ambulance work. His Manual of Ambulance ran into many editions and became a standard text-book in the North-East. He had the qualities of a leader and took his full share in work outside the profession. He was a member of the Council of the British Red Cross Society (Scottish Branch). He was Red Cross Commissioner for the North-Eastern District of Scotland. He became Major and Commanding Officer of the R.A.M.C. (Volunteers) and later Lieutenant-Colonel. He was Colonel and administrative medical officer of the Highland Division, Territorial Force, from 1908 to 1912. In these posts he was full of energy and stimulus and knew no fatigue. He took a full part in the appropriate surgical work incidental to the war and was made O.B.E.

A colleague writes: "Riddell was a fighter and could take a very strong stand on matters of professional administration. When the movement for the coördination of hospitals began in Aberdeen he nailed his colours to the 'voluntary' mast and showed all the good qualities of a 'die-hard.' In the end he changed his point of view and fell in cordially with the new developments. It was always a pleasure to discuss affairs with him even when he was on the opposite side. There was no sullenness of antagonism and no unreadiness to admit the justice of another standpoint. It was a pleasure to walk and talk with him and to hear his full-blooded and rapid opinions de omnibus rebus; but not least on surgery, which began with him as a passion and so remained. Like his great master, Ogston, he filled his students with enthusiasm, and each of them will with a full heart place a stone on his cairn. He was a native of Aberdeen and an out-and-out Aberdonian, but he had a bright way with him and the absolute self-confidence that marks the good surgeon and the military leader."

Mr. Riddell did a great deal to maintain the high standard of teaching both in the University and in the Royal Infirmary. His long and varied experience gave great weight to his opinions and his eloquent way both in speech and in writing secured a ready audience all over the North-East. The new Medical School and the new Royal Infirmary of Aberdeen owe, indirectly, not a little to Riddell's forceful personality.

THOMAS FINLAYSON DEWAR, C.B., M.D. ABERD., D.Sc. EDIN.

Dr. T. F. Dewar's death on Nov. 27th removes a man of exceptional attainments. A native of Arbroath, in Angus, he graduated before he was old enough to register, and then joined in his father's practice for some 12 years. The Dewar family of practitioners—father and two sons—was very well known in the East of Scotland. To his medical degrees he added the D.Sc. in public health, and when the medical officership of Angus fell vacant he was appointed to fill it. A little later he succeeded Dr. Nasmyth as county medical officer of Fife and Kinross, and it was his work in Fife that first attracted attention to his high quality. He had an instinctive capacity for organisation and administrative work. He kept the public health and the school medical service at a high level and, when in 1910 a second medical inspector was wanted for the Local Government Board of Scotland, Dewar was offered the appointment and accepted it. From that time till his death he was a member of the Civil Service. In this post as an officer of the medical staff he showed the same eager exactness in his work and the same unsleeping devotion to duty. He soon came to know the whole staff personally, and he became their natural consultant in medicine and other affairs.

From early manhood he was an active member of the Fifeshire Yeomanry, and in the South African War he became Surgeon-Captain in the Imperial Yeomanry, receiving the Queen's medal with four clasps. He published a volume "With the Scottish Yeomanry, 1901," and as a result of his South African experience he also produced a volume on "Sanitation of Armies in the Field." When the late war broke out he became an officer in the Territorials and was called up with the First Army. In 1916, he was D.A.D.M.S. of the 51st Division, and from April, 1916, to January, 1917, he was A.D.M.S. of the Northern Army, being mentioned in dispatches four times. He received the C.B. (Military Division) in 1918. For a period he had charge of the troops at Bedford, and his report on the outbreak of measles among the Highland regiments was an excellent piece of work.

When Dewar in 1918 returned to his civil work at the Local Government Board he was placed in charge of the venereal diseases section and the medical work of the poor-law; but his all-round ability led to his being entrusted with many difficult special inquiries. When the Board was superseded by the Scottish Board of Health, Dewar continued on the same general lines of work, but his time was devoted largely to nursing and developing the venereal disease clinics. A member of Lord Salvesen's Committee on maternal mortality, he made this subject also very intimately his own, but for the last few years he had specialised in venereal diseases and the medical service under the poor-law. His special chapter on venereal diseases in one of the annual reports of the Scottish Board of Health was afterwards published as a separate pamphlet and was an exceptionally useful piece of work.

A colleague writes thus of Dr. Dewar's methods: "Whenever he took up a new subject he went straight to the best authorities; he spent time in the laboratories mastering the technique involved and, when consulted, he could be relied upon to give with precision the essence of the latest work. Many years ago he deliberately elaborated a method of recording and filing both information and reports, and unlike most people he not only created the system but kept rigidly to it even at the expense of his health and strength. His system became an objective code of duty, and it is hardly too much to say that every half hour of his day was noted in his diary for three months in advance and the programme was rigidly adhered to. . . . A man of chivalrous nature, he was highly strung, keenly sensitive to every social influence, alert and full of a witty humour, and his graciousness was a proverb with those that knew him intimately. One of his juniors rightly called him 'one of the aristocrats of the profession,' and while he was conscious of his value and his power, he was the most modest of men."

Dr. Dewar was 63 years of age. He was an accomplished writer, and his long series of Medical Vignettes to the *Caledonian Medical Journal* contain some admirable descriptions of war in the field.

JAMES GILLON ROSS, M.B. EDIN.

Dr. J. G. Ross, who died at Whitby on Nov. 29th, was the son of the late Mr. Gilbert Grange Ross of Thurso and was born in Calcutta 59 years ago. He received his early education in Switzerland and Germany, and later at University College School, London, where he distinguished himself as a cricketer. At Edinburgh University he became secretary of the Athletic Club and was notably successful in various

forms of sport, especially running and swimming. The Queen's Edinburgh Rifles found in him a keen member, and after graduating as M.B. in 1897 he joined the Volunteer Medical Staff Corps. On leaving Edinburgh he became house surgeon at the Nottingham General Dispensary, and served for two years in Northern Nigeria in the West African Frontier Force. In 1902 he went to Whitby as assistant to the late Dr. John Wilson, and shortly afterwards entered into partnership, which he subsequently shared with the late Dr. W. H. Wilson, Dr. John Wilson's son. When the partnership was dissolved he remained in Whitby, and carried on the practice on his own account for about twenty-three years. At the time of his death he was medical officer of health for the Whitby urban district council, and had the child welfare centre under his care. A man of wide interests, he was always eager to learn of the latest methods for combating disease, and he did excellent work as instructor in ambulance work and first aid. A prominent Freemason and this year's president of the Whitby Rotary Club he was held in high esteem by his fellow townsmen. Dr. Ross saw service in the late war first with a Yorkshire Battalion and later on the staff of the Tigue Hospital at Malta. He married in 1902 Elizabeth, daughter of the Rev. George Dodds, and she survives him with a daughter and two sons, one of whom is a medical student at Leeds. His brother is Dr. Donald Ross of Lochgilphead.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS.

THE FIRST GENERAL MEETING.

THE first general meeting of the Fellows and Members of the British College of Obstetricians and Gynæcologists was held in London on Dec. 3rd and was largely attended. The President, Prof. W. Blair Bell, was in the chair, and in proposing the adoption of the report of council and the balance sheet, pointed out that the College was only incorporated as lately as Sept. 13th last. Consequently the report was brief, and the balance sheet represented for the most part the financial arrangements prior to incorporation. While registration receipts for fellowship and membership and the annual subscriptions might be sufficient to keep the College going as at present conducted, they would be quite inadequate to liquidate the expenses of a College building, or to provide the funds from which a suitable home could be purchased and furnished. The treasurer hoped, therefore, to establish three funds—an endowment fund (not less than £100,000), a house and furnishing fund (£30,000), and a fund to wipe out the liabilities in connexion with the incorporation and pre-incorporation expenses (£1600). Lord Riddell had generously given £1000 for general purposes, and other sums and benefactions had been promised. The President gave a brief sketch of the constitution of the College and of its aims. Incorporation, without the use of the appendage "Limited," was the present legal status of the College, and this gave certain financial advantages in regard to trusts and other matters. The present state was to be regarded as a stage only in progress towards the dignity of a Royal Charter, for the attainment of which the College must prove its worth to the State.

It was proposed to elect as Foundation Fellows of the College practically all of the senior obstetricians and gynæcologists in England, Scotland, Wales, Ireland, and the British Dominions; and as Foundation Members, who would subsequently become eligible for the Fellowship, the less senior obstetricians and gynæcologists. Already a majority of those approached in Great Britain and Ireland had joined; those resident in the British Dominions had not yet been invited. It was intended to elect as fellows and members only those engaged exclusively in obstetrics and gynæcology, though a certain latitude would be allowed, for example, in regard to those engaged in the public health service. The College hoped to discuss with the Royal College of Physicians of London and the Royal College of Surgeons of England the details of the granting of a diploma in obstetrics and gynæcology, for the drafting of the regulations for which a committee of the College had been sitting.

Affairs of State had already claimed their attention. The services of the College would be placed at the disposal of the Government, which intended to take action in regard to maternity problems, and had asked for assistance and advice from the College. On a matter of domestic policy, the President said that the personnel of the College, its council and officers had necessarily been elected by the original preliminary committee; but within the next few months the present officials would voluntarily resign and would offer themselves along with others duly nominated for re-election by vote of fellows and members. If the College was to make good and to justify its existence, it would need the active support, based on real interest in its endeavours, of every obstetrician and gynæcologist.

The President read to the meeting the oath of membership:—

> I solemnly affirm that I will at all times maintain the welfare and dignity of the College, faithfully obeying in the spirit as well as in the letter the Articles and Regulations, and submitting myself to the lawful authority of the Council. Furthermore, I pledge myself in the practice of the Art of Obstetrics and Gynæcology ever to have regard to the honour of the College and to the welfare of the State.

These words, he said, expressed the ideals of loyalty, progress, and service which inspired their organisation.

THE GENERAL HOSPITAL, BIRMINGHAM.

SESQUI-CENTENARY CELEBRATION.

THE General Hospital at Birmingham was founded in the year 1779 by the single-minded effort of a local physician, Dr. John Ash, F.R.S., whose memory was honoured on Dec. 10th at a notable gathering which included a midday celebration in the Cathedral, an afternoon assembly at the Hospital with orations by Prof. K. F. Wenckebach of Vienna and Lord Moynihan of Leeds, and an evening banquet at which more than 450 patrons, friends, and officers of the hospital were present. For the benefit of guests and others the story of the hospital was told in a Retrospect prepared by the senior consulting surgeon, Sir Gilbert Barling, pro-Chancellor of the University, himself unfortunately prevented by ill-health from attending. His story is a lively and worthy record of the growth of a city's care for its sick poor, side by side with the training of students and nurses and the advancement of medical science, towards their ultimate fusion in the scheme soon to be set on foot for a new hospital at Edgbaston, attached to the University, with every facility for teaching and research—the Golden Age of Medicine, as Sir Gilbert happily phrases it.

In his oration to the assembly Prof. Wenckebach discoursed on the use of the fox-glove by the bedside, with a generous recognition of the pioneer work of Dr. William Withering, a contemporary of Ash. Lord Moynihan told the story of surgery through the ages, recalling that Neolithic man suffered from spinal caries and the present-day Birmingham citizen still ran the same risk by refusing to boil his milk.

The Banquet.

At the banquet, which was a model of smooth organisation, the guests were received by the President of the hospital, Alderman A. H. James, J.P. The toast of The City was proposed by Lord Moynihan, who spoke of the medical men who had "made" the city: Lawson Tait with a leonine

personality and the heart of a child; Furneaux Jordan, Jordan Lloyd ("almost a magician"), Sampson Gamgee, blessed alike to surgeon and patient for his introduction of dry dressings; Priestley Smith, dexterous and inventive; down to Gilbert Barling and Haslam. The Lord Mayor, Alderman M. L. Lancaster, J.P., in responding, expressed the hope that the voluntary hospitals would keep pace with the growth of the city and praised the work-people whose annual subscriptions now approached £150,000. Sir John Rose Bradford, in proposing The Birmingham General Hospital, spoke with great feeling of the particular place held by voluntary hospitals in the affection of the British people, and of their dependence on the gifts and devoted service of laymen for their success. Birmingham General Hospital had arisen at the same remarkable period which saw the foundation of the Royal Infirmary, Edinburgh, and five of the great teaching hospitals of London. The city was happy to have had men capable of appreciating the great purposes that medicine might be made to serve. Alderman James, in reply, admitted a period of suspended animation in the life of the Hospital in preparation for the big scheme ahead of them. The fact that more than one in four of the Birmingham population subscribed to the contributory fund was, he said, a lasting monument to the patriotism and vision of the work-people. Councillor Miss Bartleet, J.P., chairman of the board of management, also replied. Dr. Stanley Barnes, senior physician, who received an ovation on rising, proposed The Guests, and Prof. Wenckebach in response thanked for the good cheer and the good fellowship which he and all his fellow guests had enjoyed. A word should be added in praise of the admirable acoustic properties of the Grosvenor Room where the banquet was held.

AN OUTSIDE VIEW OF CONTRIBUTORY PENSIONS.

Dr. E. S. Moorhead, chairman of the welfare supervision board of the Winnipeg Health and Public Welfare Service, has recently been in this country studying the contributory pensions scheme, and has presented a report to his Board. He finds that the scheme is exceedingly popular in this country, and that many more people would like to be included within its scope. He draws attention to the fact that the machinery for collecting contributions was already in operation through the National Health Insurance Act. It is as easy to collect 1*s.* 6*d.* a week as 9*d.*, and to attach two stamps to a card involves little more labour than attaching one. This gave the scheme a great advantage from its inception, and provided a smooth and successful working. The difficulty in the way of extending it to the whole of the country is just this difficulty, Dr. Moorhead thinks, of collecting the contributions. To throw the scheme open on a voluntary basis would be economically unsound, as the healthy young men would be unlikely to seek admission while the middle-aged man suffering from tuberculosis, heart disease, or other disability would immediately join, especially if he had a wife and young children dependent on him. It would also be economically impossible to send round public collectors to the small shop-keeper, the small farmer, the country blacksmith, and the poorly paid clergy, all of whom were anxious to be included in some form of contributory pensions scheme. At first Dr. Moorhead was puzzled on hearing that the premium for men was double that for women, seeing that women live longer and are less likely to be killed by industrial accidents or by exposure. It was explained to him, however, that most of a man's insurance really goes to provide pensions for his widow or children. If he dies without leaving either widow or child under the age of 14, his estate is not entitled to recover any sum from the Government. Women, on the other hand, cease contributions when they marry, unless they continue to work—which is estimated to happen once in seven cases. Dr. Moorhead is impressed with the fact that England gives the cheapest industrial insurance in the world, and is prepared to expend for the next 35 years or more an immense sum from State funds in order to put the plan on a sound basis. He feels that Manitoba will have to face the problem of a compulsory pensions scheme and that the difficulties, though great, are not likely to prove insuperable. Any scheme which is not contributory would prove, he thinks, an excessive burden on the tax-payer in a very short time.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

BILLS ADVANCED.

IN the House of Lords on Dec. 3rd, the Poor-Law Bill, a consolidation measure, was recommitted in respect of an amendment made by the Joint Committee which considered the Bill. The amendment was agreed to and the Bill was reported with the amendment to the House. On Dec. 4th and 5th the Bill was agreed to on Report and read the third time. On Dec. 4th a Bill providing for the registration of chiropodists was read a first time. The Royal Assent was given by Commission on Dec. 6th to the Widows, Orphans and Old Age Contributory Pensions Act. On Dec. 5th in the House of Commons, Major ELLIOT'S measure The Education (Scotland) Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 4TH.

Night Baking.

Mr. MANDER asked the Home Secretary whether the Government had now decided how to deal with the subject of night baking.—Mr. CLYNES replied: This subject will be dealt with in the Factories Bill.

Sale of Tuberculous Cows.

Dr. HASTINGS asked the Minister of Agriculture whether his department had issued any regulations to prevent the sale of a cow, shown by test to be suffering from tuberculosis, for the purpose of producing milk for sale to the public; and, if not, whether he would consider the adoption of some method, such as branding, so that the purchaser might at least know the condition of the animal he is buying.—Mr. BUXTON replied: The Tuberculosis Order of 1925 requires the notification, and provides for the slaughter, of cows shown to be giving tuberculous milk or excreting tubercle bacilli in other ways, and for the compensation of their owners. Reaction to the tuberculin test does not, however, by itself, bring animals within the scope of the Order as that is not sufficient evidence that they are giving tuberculous milk. I do not consider that the branding of reactors is necessary; intending purchasers can protect their herds by only buying cows which have passed the tuberculin test.

THURSDAY, DEC. 5TH.

Ex-Service Men and Rheumatism.

Mr. RAMSBOTHAM asked the Minister of Pensions how many ex-Service men had been granted pensions in respect of rheumatism; how many of these pensioners had died from rheumatism and heart affection; and in how many cases wives had been granted a pension in respect of their husbands' death.—Mr. F. O. ROBERTS replied: Awards have been made since 1914 in respect of rheumatism to some 84,700 officers and men. The information asked for in the second and third parts of the question is, I regret, not available.

Vaccination and Nervous Diseases.

Mr. GROVES asked the Minister of Health how many of the cases of nervous disease following within a month of vaccination were vaccinated with Government lymph and how many with other lymph; and whether his department had any reason to suppose that complications had attended the use of foreign lymph more frequently than the use of Government lymph.—Mr. GREENWOOD replied: Of the total number of cases of the kind referred to which have been brought to the notice of my department since 1922, 148 were vaccinated with Government lymph and 37 with other lymph. I have no information as to the lymph used in the remaining 8 cases. With regard to the second part of the question, no information is available as to the extent to which lymph, other than Government lymph, is used in this country and no conclusions can, therefore, be drawn as to the comparative likelihood of complications following the use of Government lymph, and lymph supplied from private sources, respectively.

Prevention of Contagious Abortion in Cattle.

Lieut.-Colonel FREMANTLE asked the Minister of Agriculture if his department issued and recommended the use of a live vaccine as the best 'preventive against contagious abortion in cattle; how long this had been in use; whether it had increased or reduced the incidence of the disease in cattle; and what steps he proposed to take to ensure the adoption of every measure for the reduction of this pest.—Dr. ADDISON (Parliamentary Secretary to the Ministry of Agriculture) replied: In herds in which the percentage of

infection of contagious abortion is not high, the Ministry recommends that the disease should be controlled by hygienic measures and the agglutination test for the detection of infected animals. In herds in which infection is heavy, the Ministry advises the immunisation of all non-pregnant animals with the live vaccine. This vaccine has been issued from the Ministry's Laboratory since 1912, and the demand for it indicates that it is serving a useful purpose. The disease does not lend itself to legislative control, and therefore my right hon. friend intends to encourage and assist research workers to concentrate on the discovery of better methods of immunising cattle against the disease.

Milk Service in Schools.

Viscount LYMINGTON asked the President of the Board of Education the number of schools having milk clubs, together with the number of school-children receiving milk under the National Milk Publicity Council's scheme for milk service in schools.—Sir CHARLES TREVELYAN replied: I regret that I am unable to give the noble lord the particulars for which he asks, but I understand that partly as a result of the activities of the National Milk Publicity Council there has, in the past few years, been a considerable extension of these arrangements for supplying milk to children in the schools. Among other places, comprehensive arrangements are in operation at Birmingham and Leeds.

District Medical Officers and Health Committees.

Mr. HACKING asked the Minister of Health whether he would take steps to prevent members of town councils who were also district medical officers under boards of guardians allowing their names to be included on the health committees of boroughs for 1930, when such health committees would be the public assistance committees of the boroughs in which these persons acted as district medical officers; and whether such persons would be prevented from taking part in the arrangements for the setting up of public assistance committees when they were actually paid servants of the Ministry of Health.—Mr. GREENWOOD replied: As the law stands, district medical officers under the poor-law who will be transferred to county councils and the councils of county boroughs under the Local Government Act, 1929, will be automatically disqualified from membership of the council or a committee of the council to whom they are transferred. District medical officers are employed and paid by the boards of guardians and not by my department.

Pauper Lunatics.

Major GLYN asked the Minister of Health the total number of pauper lunatics cared for by the poor-law authorities, and at what cost; what was the number accommodated at the expense of the asylum authorities; what was the number maintained at the expense of the Lunacy Acts. Board of guardians recover part of the cost of maintenance from friends and relatives of the patient. The powers and duties of the Board of Control in the case of patients on out-door relief are limited to obtaining a return from the poor-law authorities, and, in the case of lunatics in poor-law institutions, to paying periodical visits. As regards patients detained in county and borough mental hospitals, the Board of Control examine the documents upon which they are received and detained, and also consider periodical medical reports. They also visit the institutions and have general supervision over the arrangements for the proper care of the patients.

TABLE B.

—	Financial year ending March 31st.			
	1910.	1920.	1925.	1929.
	£	£	£	£
Maintenance ..	2,619,073	5,305,008	6,510,639	6,938,235
Building and repairs ..	417,211	453,288	764,822	999,417
Land purchased	7,328	36,964	39,609	36,597
Land rented ..	4,878	5,536	6,843	7,008
Total ..	3,048,490	5,800,796	7,321,913	7,981,257

Inspection of Dairy Farms.

Lieut.-Colonel FREMANTLE asked the Minister of Health how many inspectors were employed by his department in inspection of dairy farms; and how many of the inspectors were qualified veterinary surgeons.—Mr. GREENWOOD replied: Two inspectors are employed by my department in the inspection of dairy farms, and neither of them is a qualified veterinary surgeon. I may add that the only farms inspected by officers of my department are those producing Certified and Grade A (tuberculin tested) milk, and that the examination and testing of cattle on these farms are carried out by qualified veterinary surgeons approved by the department.

MONDAY, DEC. 9TH.

Medical and Surgical Treatment of ex-Service Men.

Sir GEORGE BOWYER asked the Minister of Pensions whether he intended to take over all medical and surgical treatment of ex-Service men, providing, where necessary, full-time medical officers for the purpose.—Mr. F. O. ROBERTS replied: My department has authority under the Royal Warrants to provide such treatment only as is not otherwise provided. I could not, therefore, adopt the course suggested by the hon. and gallant Member without duplicating other statutory arrangements for the provision of treatment which are in operation under the National Health Insurance Acts and other enactments.

Maternity Benefit.

Mr. KEDWARD asked the Minister of Health whether he was proposing to make any change in the method of granting maternity benefit; and whether any reduction in the present amount of £2 was being considered.—Miss LAWRENCE

TABLE A.—*England and Wales: Total Number of Pauper Lunatics on Jan. 1st in each of the Years Specified.*

Where maintained.	1910.			1920.			1925.			1929.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
In county and borough mental hospitals..	43,997	50,217	94,214	34,389	47,686	82,075	39,884	55,854	95,738	44,629	61,473	106,102
In licensed houses:												
Metropolitan ..	29	83	112	12	61	73	—	—	—	15	28	43
Provincial	3	—	3	161	311	472	—	—	—	—	—	—
In criminal lunatic asylum (Broadmoor)	1	—	1	2	—	2	3	—	3	2	—	2
In poor-law institutions:												
Ordinary poor-law institutions ..	5,143	6,281	11,424	4,271	6,330	10,601	4,718	6,644	11,362	4,666	6,513	11,179
Metropolitan district asylums	3,336	3,508	6,844	2,306	3,132	5,438	2,314	2,770	5,084	2,118	2,490	4,608
On outdoor relief ..	2,181	3,458	5,639	1,424	2,482	3,906	1,282	2,216	3,498	1,323	2,277	3,600
Total	54,690	63,547	118,237	42,565	60,002	102,567	48,201	67,484	115,685	52,753	72,781	125,534

N.B.—The cost of maintenance of all these patients was borne by boards of guardians, except that of certain patients in county and borough mental hospitals who were chargeable to county or borough rates as follows: 1910, 1,669; 1920, 1,160; 1925, 1,336; 1929, 1,400. M = males; F = females.

boards of guardians; what was the position of the board of control in regard to the care and supervision of these lunatics; and how these figures compared with 1925, 1920, and 1910.—Mr. GREENWOOD replied: Figures are not available in regard to all the points raised by the hon. and gallant Member, but Table A shows the total number of pauper lunatics in the four years mentioned, and indicates where they were maintained, while Table B shows the expenses incurred in connexion with public mental hospitals. The cost of maintenance falls upon boards of guardians, the remaining expenditure upon local authorities under the

(Parliamentary Secretary to the Ministry of Health) replied: The whole question of the arrangements for maternity benefit under the scheme of National Health Insurance is under consideration, but my right hon. friend is not yet in a position to say what alterations, if any, will be made.

Drinking Water-supply in Villages.

Mr. GRANVILLE asked the Minister of Health if he was prepared to consider area schemes for providing employment in the building of rural cottages and the provision of a system for the supply of drinking water in villages.—Miss LAWRENCE replied: My right hon. friend proposes to give special consideration to the question of rural housing in connexion with forthcoming legislation. As regards rural water-supplies, my right hon. friend will be prepared to consider any schemes, and I may point out that the Government have recently announced special terms of assistance as part of their unemployment proposals.

Indian Army Veterinary Corps.

Major GRAHAM POLE asked the Secretary of State for India how many Indians had been admitted to the commissioned ranks of the Indian Veterinary Corps since that arm of the Indian Army was opened to Indian gentlemen.—Mr. BENN replied: No Indian has yet been commissioned in the Indian Army for employment in the Indian Army Veterinary Corps, but one candidate has been selected and is now under training in this country for that purpose.

TUESDAY, DEC. 10TH.

Training and Employment of Midwives.

Viscountess ASTOR asked the Minister of Health whether it was intended to introduce legislation embodying the scheme outlined in a memorandum of the British Medical Association for a national maternity service for England and Wales, the findings of the Royal Commission on National Health Insurance, and the recommendations of the report of the departmental committee on the training and employment of midwives.—Miss LAWRENCE replied: My right hon. friend is not yet in a position to make a statement on this subject.

Registration of Mental Nurses.

Mr. REMER asked the Minister of Health if his attention had been called to the fact that mental nurses in possession of the Royal Medico-Psychological Association's certificates did not receive admission to the register kept under the Nurses' Registration Act, 1919; and would he issue an order to rectify this position.—Miss LAWRENCE replied: I would refer the hon. Member to the reply given him on Nov. 28th. My right hon. friend is not empowered to issue any order in this matter.

Death after Vaccination.

Mr. FREEMAN asked the Minister of Health whether his attention had been called to the case of Clarence Morris Martin, who died on Nov. 14th, having been vaccinated on Oct. 9th, and that the coroner reported the death was caused by septicæmia following the accidental breaking off of the vaccination scab; had he instituted inquiries into this case, and had he anything further to report.—Mr. GREENWOOD replied: My attention has been called to this case which occurred at Southampton, and inquiries have been made into the matter. The death took place on Nov. 10th, the cause of death certified by the coroner, after an inquest, being as stated in the question. I am satisfied that death was due to accidental infection of the site of the vaccination from some extraneous source, and that no blame attaches to the public vaccinator or to the public vaccinator used.

BRISTOL HOSPITALS.—The 193rd annual report of the Bristol Royal Infirmary (380 beds) shows that last year 8082 patients were admitted to the wards, and that the out-patients numbered 66,319. Of the 1,397 maternity cases 810 were admitted, the others being attended to in their own homes. Of the total births in Bristol 21 per cent. received attention at the infirmary. Very satisfactory results are stated to have attended the work of the cancer research department, and the "Bristol Royal Infirmary lead treatment" has "gone all over the world."—At the Bristol General Hospital there is a new out-patients' department and a new children's ward and operating theatre are being provided. A new ward for the treatment of male accident and other surgical cases has been necessitated by the long waiting-list of surgical cases. The local poor-law hospitals have no vacant beds available for the overflow of surgical cases. The cardiac research centre has been busily engaged. During 1928, £9763 was paid by, or on behalf of, patients, but the adverse balance on ordinary expenditure account exceeded £12,000.

Medical News.

UNIVERSITY OF CAMBRIDGE.—On Dec. 6th the following degrees were conferred:—

M.D.—*W. L. Harnett, K. E. Harris, J. D. M. Stewart, and R. A. Hickling.

B.Chir.—W. E. Mashiter and C. G. Townsend.

* By proxy.

UNIVERSITY OF BRISTOL.—At recent examinations the following candidates were successful:—

M.D.

W. A. Gornall.

FINAL EXAMINATION FOR M.B., CH.B.

Part II.—*J. J. J. Giraldi, J. E. Newton, and N. C. Tanner. The following passed in groups which completed their examination: N. L. Price, N. D. Gerrish, and Mabel F. Porter. *In Group II. only*: R. M. Norman.

* With second-class honours.

Part I., including Forensic Medicine and Toxicology.—J. S. Adamson, T. A. Barnabas, J. E. Brown, H. L. Cleave, J. L. S. Coulter, C. J. N. Davis, F. W. A. Fosbery, L. R. Jordan, J. A. Kersley, R. H. Moore, Elizabeth S. G. Owen, C. N. Royal, and W. A. F. Taylor.

Part I.—L. P. Ashton.

FINAL EXAMINATION FOR L.D.S.

J. D. Galloway.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—On Dec. 2nd the following were admitted Fellows of Faculty: Alfred Mackenzie Clark, Joshua Ferguson, William David Henderson Stevenson, and Rosie Swamikan.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—At the Annual Meeting of the College on Dec. 5th Sir Norman Walker was elected President, Dr. Robert A. Fleming was nominated Vice-President, and the following were elected Members of Council for the ensuing year: Dr. G. Lovell Gulland, Dr. John Orr, Dr. William Fordyce, Dr. Edwin Bramwell, and Dr. Fergus Hewat. At the Extraordinary Meeting which followed, Dr. John Orr and Dr. William Fordyce were elected Representatives of the College on the Board of Management of the Royal Infirmary of Edinburgh.

WEST LONDON HOSPITAL.—The annual report states that the 3628 in-patients in 1928 stayed on an average 20·57 days instead of the 21·75 days of the previous year, a shortening which enabled a larger number of patients to be received. They cost £3 8*s.* 7*d.* per week, an increase of 1*s.* 4*d.* There were 275,739 out-patient attendances; each patient cost 8*s.* 10*d.* A new casualty department is being provided at a cost of between £4000 and £5000, and the new department for venereal diseases has cost £14,000. The work of the post-graduate college is still much hampered by lack of adequate accommodation.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—The annual dinner of the school was held at the Savoy Hotel, London, on Thursday, Dec. 5th; Mr. Joseph Cunning, senior surgeon to the hospital, was in the chair and presided over a great assembly of those officially connected with the hospital, including students, and a large number of guests.

Lady Emmott proposed Prosperity to the School and Hospital, having taken Lord Byng's place, who was unavoidably absent. The audience, she said, must be experiencing the sentiment aroused when, on arriving at a theatre, they found a notice to say that the principal part was going to be played by a substitute; further, she did not feel qualified to speak, being only a lay-woman, as to the scientific attainments of the students, although she was able to compliment them warmly on the excellence of the entertainments which were given each Christmas. Lady Emmott regretted the difficulties made by the metropolitan teaching hospitals with regard to the admission of women students, although this attitude made the work that was done in the School of Medicine for Women at the Royal Free Hospital more than ever valuable. She concluded by paying tribute to the men members of the medical staff for their hearty coöperation in efforts that were being made, and successfully made, to help women students, while she knew that she was right in saying that the students at the Royal Free Hospital were making a fine response.

Mr. Cunning, in reply, called attention to the zeal and efficiency of past physicians and surgeons attached to the staff, mentioning in particular the manner in which Sir James Berry had secured by his pertinacity the erection of the operating theatres. In reviewing more recent developments he said that a new pathological department was urgently needed and that funds were being raised for that

purpose, while the Eastman Dental Clinic had nearly reached completion. He closed by paying a warm tribute to the practical services and generosity of Lord Riddell and Sir Albert Levy.

Dr. Chodak Gregory proposed the toast of the Guests, and said that gratitude was due to Lady Emmott for taking Lord Byng's place and proposing the chief toast of the evening. She reminded the audience that Lady Emmott was both a member of the association of the medical school and a member of the board of management of the hospital, and was therefore well posted in her facts. Enumerating the guests present she selected for special mention Sir Walter Schröder, whose kindness to the young house officers who found themselves in the coroner's court was invariable. Other guests to whom she alluded by name were Dr. Ethel Bentham, a former student of whom the school was proud, as a Member of Parliament; Dr. Catherine Chisholm, representing the Manchester Babies Hospital, who, she said combined the scientific investigation of the infant with the human treatment of the baby; Dr. Deller, the Principal of the University of London, and Mr. Rew, the secretary of the Conjoint Examination Board, whose names had a melancholy association with examinations; Miss Strachey, the Principal of Newnham, whom she congratulated on sending to the Royal Free certain of her own old students; and Lady Rhondda, whose championship of the cause of the working woman was known to all. She associated the toast with the names of Sir Patrick Hastings and Lady Rhondda.

Lady Rhondda, in reply, recalled the history of the school, and made special reference to the Marie Curie Hospital for the treatment of cancer which was staffed from the Royal Free.

The health of Mr. Cunning was proposed by Dr. Elizabeth Bolton, senior surgeon to the Elizabeth Garrett Anderson Hospital, who recalled the debt which the students at the Royal Free owed to the clinical teaching of the chairman, teaching which, she said, was embodied and condensed in a volume known to many generations of students as "little Cunning." Mr. Cunning briefly replied and invited the company to adjourn to the ball-room which promptly became crowded, and remained so until a late hour.

UNIVERSITY OF OXFORD: *G. H. Hunt Scholarship.*—This Scholarship is awarded without examination every second year to a graduate in medicine of the University (of either sex) who has not exceeded five years from the date of passing the final examination for the B.M. degree. Its value is £100, or such smaller sum as two years of the income of the Fund provides. Candidates are required to travel abroad for not less than three months for clinical study or research in medicine. Preference is given to those intending to be surgeons or general practitioners. The next election will be made in April, 1930, and candidates must apply to the Dean of the School of Medicine before Feb. 11th, 1930.

ROYAL SURGICAL AID SOCIETY.—This Society, which was founded in 1862 to supply surgical appliances to the poor, held its annual meeting at the Mansion House last week. The report stated that the total income had been £56,679, and the expenditure exactly £1000 less. During the year 29,262 patients were assisted, and 40,254 surgical appliances supplied at a cost of £46,917.

A CHILDREN'S WELFARE CLINIC.—At the quarterly court of the London Hospital last week Lord Knutsford, the chairman, reported that £3000 had been obtained towards the £4700 required to reconstruct the children's welfare clinic. The present clinic is so overcrowded as to be "a scandal." The Queen has given £250, and Sir Albert Levy has undertaken to contribute £125 a year for 16 years towards the maintenance of the clinic.

INSTRUCTION FOR D.P.H.—A three-months' course of lectures and demonstrations on clinical practice and in hospital administration will be given at the North-Eastern Hospital, St. Ann's-road, Tottenham, London, N., by Dr. F. H. Thomson, the medical superintendent, on Mondays and Wednesdays, at 4.45 P.M., and alternate Saturdays at 11 A.M., from Jan. 6th, 1930. Application should be made to the Clerk to the Metropolitan Asylums Board, Victoria Embankment, E.C. 4.

SCOTTISH WOMEN'S WAR HOSPITALS.—At a meeting of the Scottish Women's War Hospitals at the Royal Fre Hospital last week the Duchess of York received purse containing £6285 for a scheme to commemorate heroic Scots women. The money will be used to build, equip, and endow a new ward in the maternity wing of the Royal Free Hospital and a maternity centre at Islington to be named after the Duchess. Each bed will be named after a unit of the Scottish Women's Hospitals, which worked in most of the fields of operation during the war, or after a member who gave her life in service. One of them will be dedicated to the memory of the founder of the hospitals, Dr. Elsie Inglis.

HARVEIAN SOCIETY: *Buckston Browne Prize.*—The President and Council of this Society have awarded the biennial Buckston Browne Prize of £100 and medal to Dr. C. Bruce Perry, for an essay on "Chronic Streptococcal Illnesses." Proxime Accessit: Dr. R. Cove-Smith.

BERNHARD BARON TRUST.—The annual distribution of grants from the £500,000 trust created by the late Mr. Bernhard Baron has lately been made. Contributions have been received by about 270 hospitals, orphanages, and kindred institutions, the total being £36,530.

LEEDS HOSPITAL FOR WOMEN.—From next Jan. 1st, four wards will be set apart for paying patients, at a charge of 5 guineas a week. Surgeons' fees will be on a reduced scale. There will be not more than two patients to a ward, and no separate cubicles.

DANGEROUS DRUGS ACT PROSECUTION.—Richard William Starkie, whose name was removed from the Medical Register in 1922, and who was stated by the police to have been at one time a police surgeon, and to have been in prison for administering a noxious drug, was sentenced at Maidenhead on Dec. 2nd to 12 months imprisonment for an offence under the Dangerous Drugs Act. The bench at first made the sentence one of hard labour, but subsequently altered this to imprisonment in the second division.

PITHEAD BATHS AT TWOPENCE A WEEK.—On Dec. 7th at the Grassmoor Collieries, New Chesterfield, the Minister of Mines, Mr. Ben Turner, opened pit-head baths of the most modern type. They have cost £14,000, which is provided by the Miners Central Welfare Committee, and the Grassmoor Colliery Company will supply water, electricity, and gas cost free. There is accommodation for 1200 miners and the cost will be twopence a week which will be deducted from their wages.

HOSPITALS AND MOTOR ACCIDENTS.—In the quarter ending with Sept. 30th last motor accident cases cost the Royal Free Hospital £209, of which only £35 was refunded to the charity.—Between April 1st and Oct. 30th last Sheffield Royal Infirmary and Sheffield Royal Hospital treated between them 479 motor accident cases.

BRADFORD ROYAL INFIRMARY.—The annual report for 1928 mentions that approximately 450 persons die annually in Bradford from cancer. An appeal for £20,000 to provide an adequate supply of radium had been sufficiently well responded to to justify the purchase of 1 gramme, and Dr. Chester-Williams, of the London Radium Institute, was appointed radium specialist.

ROYAL GWENT HOSPITAL.—Last year this hospital at Newport, Mon., had a surplus of income over expenditure of £5709 which was used to discharge the debt on the building extension fund. The income was £31,238, the highest in the history of the hospital. The workmen's fund produced £13,400, an increase in two years of nearly 50 per cent. During the year 2257 patients were admitted; there were 6419 cases in the casualty department, and 20,404 attendances in the venereal department.

HOSPITAL ACCOMMODATION AT HARPENDEN.—The Hertfordshire village of Harpenden is at present served by a nursing centre. Mr. Halley Stewart, a local resident, regards this as inadequate to the growing needs of the neighbourhood and, by way of celebrating his approaching ninety-second birthday, has offered 67 acres of land, his own house, and three cottages for the foundation of a cottage hospital.

EYE, EAR AND THROAT HOSPITAL FOR SHROPSHIRE AND WALES.—Last year this Shrewsbury hospital treated 6840 patients, a large increase, of whom 1351 were in-patients. Diseases of the eye and errors of refraction accounted for 4505 of them, and there were 1070 major operations, 88 of which were for cataract; there were 11 cases of ophthalmia neonatorum. The medical officer's report states that the appointment of an honorary dental surgeon has been of great value both from a diagnostic and a curative aspect.

DAVID LEWIS EPILEPTIC COLONY.—At the annual meeting of the David Lewis Manchester Epileptic Colony at Warford, Alderley Edge, on Dec. 5th, it was stated that the demand for accommodation in the colony continued to increase. Although the majority of the people who took up residence in such a colony did not cease to have fits almost all benefited very greatly. The inmates had peace of mind, the enjoyment of life, and the feeling of being useful, without which they must inevitably deteriorate in happiness, in intelligence, in good conduct, and in health. The group system for epileptcs made them feel normal, and instead of depressing them it had the opposite effect.

Medical Diary.

SOCIETIES.

HUNTERIAN SOCIETY.

MONDAY, Dec. 16th.—8.30 P.M., Discussion on The Whitlow and Its Complications, opened by Mr. V. Zachary Cope and Mr. H. W. Carson, preceded at 7.30, by Dinner at Simpson's Restaurant, 2–3, Bird-in-Hand Court, 77, Poultry, Cheapside, E.C.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, W.C.

FRIDAY, Dec. 20th—5 P.M., Discussion on The Public Health Service and its Future, introduced by Prof. H. R. Kenwood and Prof. W. W. Jameson.

CHELSEA CLINICAL SOCIETY.

TUESDAY, Dec. 17th.—8.30 P.M., Discussion opened by Dr. G. Murray Levick on Present Position and Possibilities of Physical Treatment, preceded, at 7.30, by Dinner at the Hotel Rembrandt, Thurloe-place, S.W.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Dec. 16th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Dec. 17th.—5 P.M., Dr. J. A. Drake: Urticaria.
THURSDAY.—5 P.M., Dr. H. G. Burford: Pathology Demonstration.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Dec. 18th.—4 P.M., Prof. E. L. Collis: Industry in Relation to Personal and Public Health.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Dec. 20th.—4 P.M., Mr. F. W. Watkyn-Thomas: Fractured Skull and the Aural Surgeon.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Dec. 18th.—4.15 P.M. (in the Royal Infirmary), Mr. James Taylor: Surgical Cases.

Vacancies.

For further information refer to the advertisement columns.

Acton Hospital, Gunnersbury-lane.—Res. M.O. £150.
Barnsley, Beckett Hospital and Dispensary.—H.P. £140.
Barnstaple, North Devon Infirmary.—H.S. At rate of £150.
Birmingham General Hospital.—Two Res. Anæsthetists. Each £120. Also Anæsthetist. £250.
Birmingham, Queen's Hospital.—Res. H.S. to Ophth. and Ear, Nose, and Throat Dept. Res. H.S. to Cas. Dept. Each £70. Also Hon. Phys.
Bradford City.—Asst. School Dentist. £450.
Bristol General Hospital.—Two H.P.'s, two H.S.'s, Res. Obstet. O., H.S. to Special Depts. Each at rate of £60. Also Cas. H.S. At rate of £80.
Burnley, Victoria Hospital.—H.S. At rate of £125.
Bury St. Edmunds, West Suffolk General Hospital.—H.S. £150.
Cairo, Egypt, Giza Memorial Ophthalmic Laboratory.—Pathologist and Bacteriologist. L.E. 1200.
Cardiff, Prince of Wales' Hospital.—Res. Surg. £350.
Carlisle, Cumberland Infirmary.—Pathologist and Bacteriologist. £900.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S.'s. At rate of £120 and £100 respectively.
Chester, Wrenbury Hall Tuberculosis Training Colony.—Res. H.P. £250.
Chesterfield and North Derbyshire Royal Hospital.—Cas. H.S. At rate of £200. Also three H.S.'s. At rate of £100–£175.
City of London Hospital for Diseases of the Heart and Lungs. Victoria Park, E.—Larynologist.
Coventry and Warwickshire Hospital.—Res. H.S. £125.
Dorchester, Dorset Mental Hospital, Herrison.—Jun. Asst. M.O. £300.
Durham County Hospital.—Jun. H.S. At rate of £120.
Edinburgh Royal Infirmary, Ophthalmic Dept.—Sen. Clin. Asst. and Clin. Tutor. £145. Also two Clin. Assts. Each £200.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. Phys.
Grove Park Hospital, Lee, S.E.—Jun. Asst. M.O. £500.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Huddersfield Royal Infirmary.—Res. Surg. O. £200.
Hull Royal Infirmary.—Second H.S. At rate of £150. Also Sen. H.P. At rate of £200.
Kidderminster and District General Hospital.—H.S. £150.
Lancashire County Council.—Asst. County M.O., &c. £800.
Leicester Royal Infirmary.—Hon. Phys. and Hon. Surg.
London Hospital, E.—Cardiographic Dept., Paterson Research Scholar. £400.
London University.—Geoffrey Duveen Travelling Studentship. £450.
Manchester Ancoats Hospital.—Asst. Pathologist. £350. Also Med. Reg. and Surg. Reg. Each £100.
Manchester, Baguley Sanatorium.—Sen. Asst. M.O. £500. Also Asst. M.O. £350.
Manchester, County Mental Hospital, Prestwich.—Asst. M.O. £500.
Manchester Royal Infirmary, Roby-street.—Anæsthetist. £25.
Manchester, Salford Royal Hospital.—Res. Surg. O. £200. H.S. At rate of £125. Also H.S. to Aural, Skin, &c., Depts.
Miller General Hospital, Greenwich-road, S.E.—H.P. and H.S. Each at rate of £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
North Wales, Ruthin Castle.—Jun. Res. Phys. At rate of £200.
Perth Infirmary.—H.P. £75.
Portsmouth, St. Mary's Hospital, &c.—1st Asst. Res. M.O. £350.
Princess Louise Kensington Hospital for Children, N. Kensington. H.S. At rate of £75.
Royal Free Hospital, Gray's Inn-road, W.C. — Sen. and Jun. Clin. Assts.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £180.
St. John's Hospital, Lewisham, S.E.—Orthopædic Surgeon.
Shrewsbury, Royal Salop Infirmary.—Res. H.S. and Res. H.P. Each at rate of £160.
Singapore General Hospital.—Anæsthetist. £840.
Swansea County Borough.—Asst. M.O. £600.
University College Hospital, Gower-street, W.C.—Hon. 1st Asst. for Ear, Nose and Throat Dept.
Walsall General Hospital.—Cas. H.S. At rate of £120.
Walthamstow Borough Education Committee.—School Dentist. £500.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.
Westmorland County Council.—Asst. County M.O. £600.
Wigan Infirmary.—Third H.S. £150.
Wolverhampton, Royal Hospital.—Cas. O. and Res. Anæsthetist. At rate of £125. Also H.S. for Ear, Nose and Throat Dept. At rate of £150.
Wrexham and East Denbighshire War Memorial Hospital.—Hon. Surgeon to Ear, Nose and Throat Dept.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Redruth (Cornwall); Abingdon (Berks); and at Dover (Kent).

The Home Secretary gives notice that there will shortly be a vacancy for a Medical Referee under the Workmen's Compensation Act, 1925, for the Dundee district of the Sheriffdom of Forfar. Applications for the post from duly qualified medical practitioners should be addressed to the Private Secretary, Scottish Office, Whitehall, S.W. 1, and should reach him not later than Dec. 24th, 1929.

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Districts of the Bristol, Wells and Weston-super-Mare County Courts (Circuit No. 54). Applications from surgeons should reach the Private Secretary, Home Office, Whitehall, S.W., not later than Dec. 31st.

Births, Marriages, and Deaths.

BIRTHS.

GARNHAM.—On Dec. 4th, the wife of Dr. P. C. C. Garnham, of a daughter.
SHIRES.—On Dec. 5th, at Welbeck-street, W., the wife of Dr. Bertram Shires, of a daughter.

MARRIAGES.

DANBY—ARKELL.—On Dec. 7th, at Holy Apostles Church, Cheltenham, Alfred B. Danby, F.R.C.S., of Birmingham, son of Mr. and Mrs. Danby, of Wellington, New Zealand, to Victoria, youngest daughter of the late James Arkell, of Highworth, Wilts, and of Mrs. Arkell, Oak Hill, Charlton Kings, Cheltenham.
READ—GILL.—At Linkinhorn Parish Church, Cornwall, on Saturday, Dec. 7th, by the Rev. G. Rhys, assisted by the Rev. C. C. C. Bosanquet, Charles David Read, M.B., F.R.C.S.E., 1, Park-crescent, London, W.1., to Mabyn Gill, The Old House, Rilla Mill, Callington, Cornwall.

DEATHS.

ATKINSON.—On Dec. 6th, at St. Thomas's Hospital, Walter Alexander Atkinson, M.D., B.S., of Camberwell New-road, S.E., aged 66.
CUMMING.—On Dec. 7th suddenly, George William Hamilton Cumming, M.D., of "Overton," Torquay.
HUTCHISON.—On Dec. 4th, at Cheadle, Cheshire, James Hutchison, M.D., formerly of Norbury, S.W.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE FOUNDER OF THE ROTUNDA.

THE Rotunda Hospital, Dublin, which is appealing for £20,000 to bring its buildings and equipment fully up to date, was founded early in the eighteenth century by a medical man, Dr. Bartholomew Morse, a native of Maryborough in the Queen's County. Morse was born in the year 1712, and after making a special study of obstetrics he settled in Dublin, where his compassion was aroused by the wretched condition of poor women approaching confinement who found themselves without medical aid. Having resolved to do all in his power to have a hospital established in which relief and nursing should be gratuitously supplied, he travelled France, Holland, and other parts of Europe to study hospital systems.

On his return to Dublin he took a house in St. George's-lane (now South Great George's-street), furnished it with 24 beds, and in 1745 opened there the first hospital of the kind ever established, it is said, in the British Dominions. The expenses of the undertaking were defrayed chiefly out of his own purse, supplemented by the proceeds of lotteries, plays, concerts, and oratorios. Dublin was exceedingly musical in those days, and as hospitable as it is in our own generation. Morse induced many foreign vocalists and instrumentalists to come over to Dublin, among them the Italian Castruccio, who, after delighting everyone with his performances which he gave for little or nothing, sank into poverty and died in Dublin, too proud to let anyone know he was in want. So great was the concourse of people at his funeral in St. Mary's Churchyard, Jervis-street, that it is said the parish beadle was crushed to death. When the hospital in George's-lane became too small to accommodate all who sought admission Morse secured a plot of waste ground in Great Britain-street more than four acres in extent, and in August, 1748, began to lay out at a cost of about £20,000 of his own money a garden which should be an attractive place of promenade for the nobility and gentry residing in the neighbourhood. Shrubberies were planted, ornamental walks laid out, pavilions and a coffee-room erected. Fountains, statues, and coloured lamps adorned the walks, and orchestral performances brought in many hundreds of pounds annually. When he had £500 in hand, Morse started the magnificent pile of the Rotunda as we now know it. Up to the end of 1755 he collected £11,694, but this sum, added to the whole of his personal fortune, being insufficient, he petitioned the Irish Parliament for aid and obtained two grants of £6,000 each with a further award of £2000 for himself as a recognition of his exertions in the cause of humanity. On Dec. 8th, 1757, the upper ward of 50 beds was opened by the Duke and Duchess of Bedford, the ceremony being followed by a concert of vocal and instrumental music. From these concerts in the gardens the hospital continued to benefit to the extent of £4000 a year. Morse himself only just lived to see the fruition of his efforts. He fell ill in the winter of 1758 and died in February, 1759, almost without personal estate.

THE DIFFERENTIATION OF THE PROPERTIES OF FOODSTUFFS.

THE various nutritive constituents of food and their biological values, together with chemical tests to identify each, are fully dealt with in a small book [1] recently published from the department of physiology of King's College of Household and Social Science. Methods of analysing foodstuffs in order to isolate their constituents are carefully explained, with full details of the chemical reagents required and the minimum of apparatus, the latter being of such simplicity that it could be procured at the remotest store and set up in any classroom. The chemical changes involved in digestion and the effects induced by cooking foods are illustrated by suitable experiments. Finally, food tables are given and dietary standards are discussed. Teachers of domestic science will find this book of great assistance in preparing practical class demonstrations on the properties of food.

"FISGARD."

To the Editor of THE LANCET.

SIR,—I notice in your Services column in THE LANCET last week an appointment to a ship *Fisgard*. Being curious about this name I consulted many reference books such as biographies, gazetteers, lists of battles, encyclopædias, and so forth without discovering the name mentioned. In the Navy List it appears as *Fisgard* and even in 1854 I see there was a *Fisgard* at Woolwich. I have also just seen a new catalogue of prints which describes an aquatint in colours of the capture of *Immortalité*, Oct. 20th, 1798, by H.M.S. *Fishguard*, Capt. T. B. Martin, on his way to Brest after the attempted invasion of Ireland on Oct. 12th, 1798. But the old Navy List says a medal was issued for the capture of the French frigate *L'Immortalité*, Oct. 20th, 1798, *Fisgard*, Capt. Thomas Byam Martin. I suppose by this it was not "*Fishguard*" but the question remains unsolved. What is the origin of the name? Perhaps one of your erudite readers could supply an answer.

I am, Sir, yours faithfully,

London, Dec. 7th, 1929. ETYMOLOGIST.

THE SCHOOLMASTER AND THE FIRST M.B. EXAMINATION.

AT the annual general meeting of the Incorporated Association of Headmasters, to be held at the Guildhall, London, on Jan. 3rd, Dr. Terry Thomas, headmaster of Leeds Grammar School, will propose:—

(*a*) That the Incorporated Association of Head Masters agrees with the General Medical Council that a boy should have attained the age of 17 before entering himself at a University or a Medical School recognised by one of the licensing bodies.

(*b*) That a pass at the main subject standard in a Higher School Certificate Examination in any of the subjects of the First Professional Medical Examination should be accepted, subject for subject, for the purposes of exemption from such subjects in the latter Examination.

WHITAKER'S ALMANACK.

THE sixty-seventh annual volume of Joseph Whitaker's Almanack still contains the astronomical and other cosmic data which have made it the boon companion of seamen and star-gazers for half a century, but it also contains the current everyday knowledge which makes it (in the immodest but perfectly true words of the editor-in-chief) indispensable to all who speak or read the English language. Civilisation would suffer appreciably if the files of the Almanack were lost in a cataclysm. While it contains classified information about the metropolitan hospitals and other medical information which may be of value to the public, its value to the medical man is as a vade-mecum of general information. The new features of the present issue include the names of the new Ministry and of the Members of the new House of Commons which alone make it worth its price. The Almanack has been published in the first week of December in order to make it available as a Christmas or New Year's gift to friends and kinsmen overseas. The price is 6*s*. for the complete edition of 928 pages, 3*s*. for the shorter edition of 608 pages in paper cover.

CHOCOLATES AND COCOA.

Messrs. Cadbury Bros., Ltd., have added to their large range of chocolates several preparations with new and palatable flavours, and these are included in a selection known as "Princess Elizabeth" assortment. These chocolates should prove popular, as they supplement the "King George" and other favourite assortments. Other samples sent to this office of recent invention included the new "Holiday" slab chocolate, and a conserve containing almonds and raisins; the well-known Bournville Cocoa, and a new beverage "Cadbury's Cup Chocolate," which is claimed to possess the virtues of delicacy and flavour associated with French *chocolat*, while it can be made instantly with boiling milk. Special attention has been given by the firm to the appearance and packing of their wares, while all the new productions are up to their high-class standard.

[1] Properties of Food. By W. M. Clifford, M.Sc. Lond., Assistant Lecturer and Demonstrator in Physiology, King's College of Household and Social Science; and V. H. Mottram, M.A. Cantab., Head of the Department of Physiology in the College. London: University of London Press. Pp. 128. 2*s*. 6*d*.

Appointments.

CATCHPOOL, DOROTHY M., M.B., B.S. Lond., has been appointed Medical Officer of Health for Friern Barnet.

MCCURRICH, H. J., M.S., M.B. Lond., Hon. Surgeon to the Hove Hospital.

New Sussex Hospital for Women and Children, Brighton: MANLEY, M. M., M.B., B.S. Lond., House Physician; ROBINSON, M. M. F., M.B., B.Ch., B.A.O. Belf., House Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: D'ALTON, R., L.R.C.P. Irel., L.R.C.S. Irel (Ammanford, Carmarthen); SECCOMBE, C. W., L.R.C.P. Lond., M.R.C.S. (Southall, Middlesex); and ROBERTS, J., M.B., Ch.B. Liverp., F.R.C.S. Eng., Hon. Asst. Laryngologist, Royal Infirmary, Liverpool.

Huxley Lecture

ON THE

CRYSTAL STRUCTURE OF ORGANIC SUBSTANCE IN ITS RELATION TO MEDICINE.

Delivered at Charing Cross Hospital on Nov. 28th, 1929,

BY SIR WILLIAM BRAGG, K.B.E., D.Sc., F.R.S.,
DIRECTOR OF THE ROYAL INSTITUTION OF GREAT BRITAIN AND OF THE DAVY-FARADAY RESEARCH LABORATORY.

THE choice of a subject for a lecture in honour of Huxley is no light matter. Perhaps the best test that can be applied in order to determine its suitability is to ask whether Huxley himself would have been interested in it. I cannot but think that the opening out of a new means of inquiry into the structure of living substance would have attracted his attention. It is true that we are only at the beginnings of such a movement; but already it is possible to see some features of Nature's designs which hitherto have escaped us, and the future seems to contain most attractive promises. It is my hope that I may succeed during the hour that is allowed me in making plain the prospect of gain to biological science; and in the end to medicine. That which I have to set out is not yet, of course, closely related with medical practice; but in the end it must form a link in the chain which connects the medical care of the body with the elements of which the body is built.

THE NEW X RAY ANALYSIS.

The new X ray analysis deals with matters which have hitherto been beyond our power to examine. Of atoms and molecules as independent individuals in the fluid or gas our knowledge is relatively wide, for it has been the province of chemical and physical science to extend it. With those larger structures which the microscope reveals the needs of biology have forced us to become acquainted; we gather all the knowledge that we can respecting the primary cell and its extensions. But between these two ranges of study is a great gap, where we have hitherto lost sight of the processes of construction. What is there, we may ask, between the individual molecules and those structures which must contain millions of molecules if the eye is to detect them by optical means, which fulfil complicated functions, and which have properties that depend on details of design for ever invisible?

It is here that the X rays put new means of inquiry into our hands. We do not handle them very well as yet; we have to learn to do so. But we have one highly satisfactory source of encouragement. The new science is an exact science; its indications and measurements are not vague and ill-defined in outline; they are arithmetical and precise with a sharpness of definition which we cannot yet use to the full. It is the power of interpreting what is presented to us that lacks development. The ore is rich but we have to find out how to treat it if we are to extract the full value of its contents.

ORDERED ARRANGEMENT OF MOLECULES.

The analysis of structures by X rays rests on two simple facts. The first of these is a most remarkable and widespread tendency in Nature to regularity in the arrangements of molecules. If we did not suspect this before, the X ray analysis has now forced it upon us. The tendency varies in intensity. Although molecules are always drawn together, the agitation of thermal movement may prevent them from settling into position, as, for example, in a molten substance. Or molecules may be surrounded by crowds of other molecules which keep them apart, or even act upon them so as to reduce their mutual attractiveness, as when a substance is in solution. When, however, the tendency is allowed to develop, the molecules pack themselves together according to some regular pattern. Usually the pattern is surprisingly simple; in a very large number of substances two or four or some other small number of molecules are enough to complete the pattern which, repeated through space in all directions, forms the basis of the solid body. Now the solid body is of immense importance. The fluid and gaseous forms of matter have also their importance, and the researches of physics and chemistry have explained to us many of their properties in terms of their composition. But we have known very little of the way in which the properties of the solid depend on its composition; chemistry and physics have been silent on the subject. If solid bodies are always inclined to base their structure on regularity of arrangement during their first formation, and to complete it afterwards when they have the chance, which is indeed the case, it is clear that the regularity must be a powerful factor in the determination of their characters. Such a universal feature of Nature's designs cannot be without purpose and effect. Indeed we are amply familiar with the fact in common practice. The properties of a steel depend greatly on this molecular arrangement; to use a more common phrase, they depend on the state of crystallisation. The so-called "crystal" is nothing more than a body in which this arrangement is carried to such an extent that the result is visible. The metallurgist has long made use of the microscope to study the crystalline condition of his metals and alloys and is fully aware of its fundamental importance. He is now using the X ray methods because they give him much exact information about the crystallisation which he could not obtain before. My hope and expectation is that the biologist will soon be following the same practice; indeed a beginning has already been made.

This tendency to arrangement is of universal occurrence. It is the first condition of solid growth. It is quite rare to find that the X rays when applied in the search for it are unsuccessful; and when they fail it is probable that the X ray technique is alone at fault. When molecules begin to group themselves together in many places at the same time, in the same mass of material, and when these nuclei grow into crystals which touch each other, the meeting systems will not generally be in mutual alignment. The body will consist of a multitude of minute invisible crystals irregularly oriented with respect to each other. When these minute crystals consist each of a few molecules only the X rays find it difficult to reveal them. But when a few hundred or even a few score of molecules have joined together in each crystal the task is easy, and the X rays are able, as we shall see, not merely to show the regularity of arrangement which has come about, with various details as to its nature, but also to give a good idea of the size of the aggregates; each of which, it is to be remembered, is invisible even in the microscope. A single crystal weighing as much, say, as a milligramme is at present the ideal body for investigation, but it is not often to be obtained, especially in the case of the constituents of living bodies.

This, then, is our first fact: this universal tendency to arrangement of which we have only lately been able to perceive the extent. It is not merely in the obvious crystal, diamond, or salt, or sugar, or any one of the hundreds of thousands of such examples that arrangement is the basis both of structure and quality, but there is order also in such substances as fats and muscles, hair and wool, cotton and silk, bone and shell. We can already observe even in these bodies cases in which their properties depend on the order of the structure. We infer that the design always has its importance and that it must be studied if we wish to know how the properties of any solid body are related to its composition. The modern study of biochemistry has already made great progress in the establishment of the link between the two sciences from which its name is jointly derived,

but the hyphen between the "bio" and the "chemistry" is really a very long one, and this new range of inquiry is part of it.

Ordered Scattering of Rays.

The second fact on which we have to depend is a phenomenon characteristic of radiations such as light or sound. When X rays, which may be described as a wave motion in the ether, pass through a body in which there is regularity of arrangement such as I have been describing, part of the radiation is scattered in a peculiar manner which is characteristic of the arrangement. The scattering does not take place all round; it is sharply confined to a limited number of possible directions. By examining those directions we can determine details of the design. If there is no regularity there is no choice of direction. This is a particular manifestation of the phenomenon of radiation of which I have just spoken. An example or two will serve to make the point clearer.

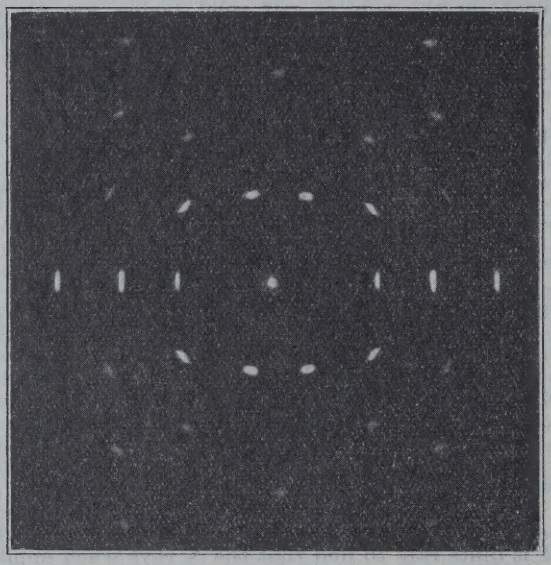
We take first a very simple case. We strike a Burmese gong made of a single sheet of metal. It is a beautiful piece of the metal worker's art, and one of its special characteristics is that the sound rings on for a long time because, as a matter of fact, there is very little waste of energy in the material itself. But the characteristic which I would have you note is that you hear it strongly when its broadside is towards you, and only feebly when it is edgeways on. There is a choice of the directions in which the radiation spreads away. The gong is supposed to be struck at one corner, so that it turns rapidly about its cord of suspension, and the rapid alternation of intensity enforces the sound upon the ear. The cause of the choice of direction is the regularity of the timing of the two sources of sound; for there are two sources—namely, the two sides of the gong. Each side is sending out pulses into the air, and, of course, they are in time with each other; when the one is pushing the air away the other is drawing back so that the air follows it. The concentration of the emission of sound in some directions rather than in others is due to this conspiracy of the two emitting surfaces and the regularity of their joint action.

Here there are but two sources of sound and a very simple and rough delimitation of the directions in which the combined effect proceeds. Suppose now we consider a more complicated case. A number of straight lines are drawn parallel to each other, and equally spaced, upon a polished surface. A ray of light falls upon the surface. There is, of course, the ordinary reflection, but in addition feebler beams of light are scattered by the mirror and proceed in certain definite directions. If the lines were ruled anyhow this would not happen. Light would be scattered diffusely; but there would be no chosen direction. The surface of the mirror is now ruled into separate sections, each of which may be considered as a secondary source of light because it scatters part of the main beam, and, because of the regularity of the arrangement, the timing of the various sets of secondary waves is also regular. In the gong there were only two secondary sources which acted together; an optical grating of ordinary pattern contains many thousands. In both cases there is selection of direction, but whereas in the case of the gong the direction of maximum emission was ill-defined, the latter shows very sharply delimited secondary rays. The theory of the phenomenon is well known to the student of physics. There is no need to go into it now; all that has to be observed for our purpose is the fact of the existence of particular directions of radiation when there is regularity of arrangement among the sources of the secondary emission. It will readily be understood that observation of the particular choice of directions supplies information as to the ruling of the lines; in fact, when the lines are spaced widely, the special directions crowd closely in on the principal direction of reflection, and vice versa.

The X Ray Diagram.

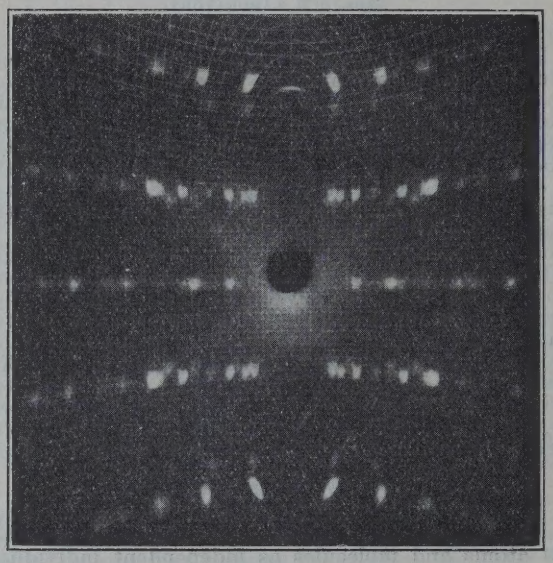
It is now but one step to the X ray case. When the X rays pass through the crystal each electron scatters a minute fraction of the incident radiation; and because the electrons on the average, even after

Fig. 1.



Mannitol.—X ray diagram obtained by Miss T. Marwick using the Laue method. A fine pencil of heterogeneous X rays passes through a small crystal, in this case mannitol, and strikes the photographic plate at the centre of the picture. The regular arrangement of spots is due to the X rays scattered by the crystal according to the principle explained in the text. The design of the crystal is to be deduced from the positions and intensities of the spots. This method of forming the photograph is due to Dr. Laue.

Fig. 2.



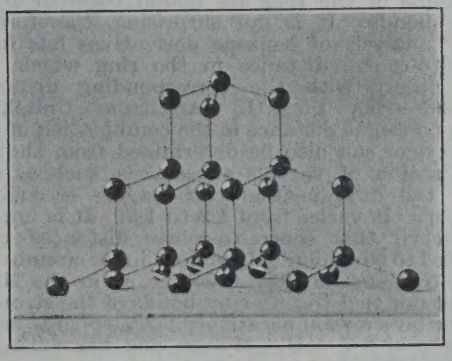
Asparagine.—X ray diagram, obtained by W. H. George using the "rotation" method. The X rays are monochromatic, and the crystal is rotated during the exposure. Asparagine is allied to aspartic acid (see the table of wool constituents given later). The network at the back of this diagram is placed there for convenience of interpretation.

allowing for any periodic or other movements about their main position, show regularities in their arrangement consequent on the regularity of arrangement of the atoms to which they belong, therefore the X rays can be scattered in certain directions only. These directions are related to the arrangement or structure of the crystal, and photographs such as those of Figs. 1 and 2 really contain the full story of the crystal construction. This is the simple basis of the new method of analysis. Up to the present we have made such advances that the simpler patterns can generally be read, though the more difficult often baffle us. But the point to be noted is that the information is there in the photograph, and very precise information at that. The position of every spot has its meaning, and not only the position but also the intensity or magnitude of the spot. It would take far too much of my present allowance of time to show how the interpretation is accomplished; such matters must be left to the text-books of the subject of which many have already been written. I must confine myself mainly to results. One point, however, must be referred to. There is a special reason why this inquiry into the regularity of the crystal is the province of X rays, and not of visible light. The periodicities in the crystal are of the same order of magnitude as the wave-lengths of the X rays—some ten thousand times smaller than the length of light waves. If this were not so the whole business would fail.

Application to Rock Structure.

It was natural that the first application of the analysis when it appeared some 15 years ago should be made to the simpler and more obvious crystalline structures such as diamond, rocksalt, fluorspar, quartz, and many others. The whole series of the silicates which form the bulk of the earth's crust have lately been analysed, and their curious dependence on oxygen as the fundamental

Fig. 3.



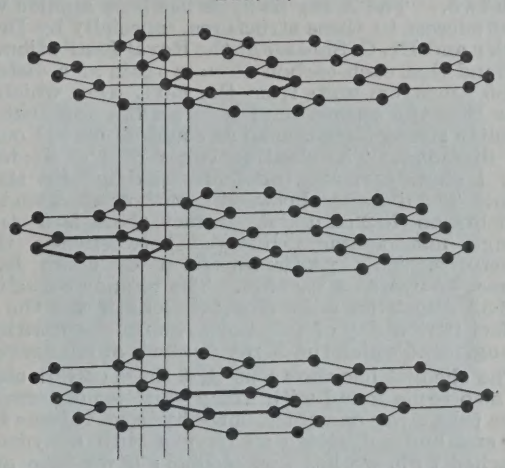
X ray analysis of the structure of diamond; every carbon atom lies at the centre of a tetrahedron at the corners of which lie other carbon atoms.

element of their structure has been laid bare. I shall, however, say very little of all these structures, as the substances with which we are now concerned are, broadly speaking, of a different class. The forces which bind the salts together are very patently electrostatic. When, for example, sodium and chlorine are in juxtaposition each sodium atom loses a negative electron and each chlorine atom gains one. Thus the sodium atoms become electrically positive and the chlorine negative. The rocksalt structure is broadly explained as due to the desire of each negative atom to surround itself with positives and vice versa. This design, which we sometimes call "ionic," is very common in inorganic substances. But in organic substances it is relatively rare.

Organic Crystals.

I will proceed, then, to discuss certain crystals in which the design is more pertinent and typical. I must first take that of the diamond. The X ray analysis shows a very remarkable structure (Fig. 3). Every carbon atom—the diamond, of course, consists of carbon only—is surrounded by four others arranged about it in a tetrahedron, the centre of which it occupies itself. The distance from centre to centre of two neighbouring atoms is 1·54 Angstrom units; a hundred million Angstrom units are equal to one

Fig. 4.



Structure of graphite: carbon atoms linked together in sheets.

centimetre. The bonds between atom to atom are not the same as in rocksalt; there are here no positives and negatives. The bonds are of a different character altogether, and of far greater strength. When these are the forces that bind the atoms together into groups or molecules the combinations generally offer great resistance to disruption. A diamond may be looked on as one huge molecule of indefinite size and content. Its great hardness is a consequence of its structure. In a substance like naphthalene the ten carbon atoms which it contains are bound together by bonds similar to those found in diamond, and hence arises the stability of the molecule. But in solid naphthalene the molecules are held together by very much weaker bonds of a totally different character, and hence the molecules are easily separated; the substance has a low melting-point.

Graphite also consists of carbon atoms, but its character is totally different; and we find the explanation when we learn its design. The atoms are now linked together in sheets, as if they lay at the points of wire netting of the ordinary hexagonal pattern (Fig 4). The distance from carbon to carbon is a very little less than in diamond. But the sheets, which are arranged like the leaves of a book, are separated from one another by no less than 3·40 Angstrom units. If we supposed that the carbon atom was a hard sphere having a diameter of one and a half Angstrom units, basing our assumption on the structure of diamond and on the arrangement of the atoms in the separate sheets of graphite, we should be at a loss to know what kept the sheets so far apart. But in fact we have no right to make suppositions of this kind. We do not know what keeps the sheets so far from one another any more than we know what sets the diamond distance at 1·54. We have to accept the fact whether we can give a reason for it or not. But we are not surprised to find that the forces binding sheet to sheet are far less than those that bind atom to atom in the same sheet. One sheet slides over another with the greatest ease; indeed, as we know, graphite is a very excellent lubricant.

In diamond the strong kind of bond holds the carbon atoms together in all three dimensions; in graphite it acts in two dimensions only, a weaker kind keeping the sheets together. We can imagine a third form of structure in which the strong bonds act only

in one direction, thus forming strong chains of carbon atoms, while each chain is bound less firmly to other chains. And we find, in fact, that this arrangement is extremely common, especially among the substances that are used in the formation of living bodies.

Structure of the Long Chain Molecules.

The simplest known form of such a chain consists of a zigzag of carbon atoms, the two atoms at either end being furnished with three hydrogens and every other with two. The X ray analysis has been applied with great success to these structures, especially by Dr. A. Muller and Dr. G. Shearer at the Royal Institution. It is found that each carbon atom is again at a distance of 1·5 Angstrom units from the next, from which we infer that the strong bond is in action, and that the peculiar zigzag form is such as could be carved out of the diamond. The slanting edges of the model in Fig. 1 show carbon atoms arranged in this zigzag form. The distance between a carbon atom and the next but one is 2·52 units. In fact, there is a strong though not complete likeness between the three structures. This particular form of chain is, of course, known as a paraffin. The regular periodicity of 2·52 Angstrom units along its length and the less perfect periodicity of 1·26 units are the regularities of arrangement which the X ray analysis at once reveals.

The chemist has shown us that these carbon chains are also to be found with many varieties of terminal. If we take away one of the three hydrogen atoms from one end and substitute an oxygen with a hydrogen attached to it we have an alcohol; if we take away the remaining two hydrogens and replace them by a single oxygen we have a "fatty acid." Changes may be made also on the sides of the chains; an oxygen may be attached in place of two hydrogens forming a so-called "ketone," and so forth. There is an immense number of different molecules, some long, some short, fringed and terminated in different ways, but always there is the backbone of the single line of carbon atoms, joined by the strong diamond bond. It is a strange thing that different plant products should have place in their constitutions for chains of characteristic length, as for instance palmitic acid, the fatty acid with 16 carbons, which is found in palm oil, valeric acid with five carbons in valerian root, and so on.

We are now, of course, approaching the range of structures found in living bodies; the long carbon chain is characteristic of all fats and oils.

Cellulose.

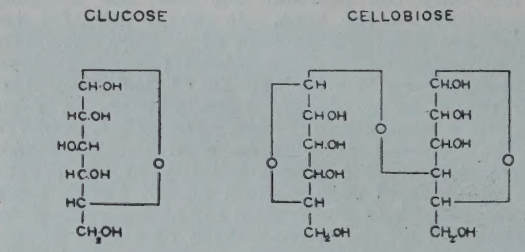
The initial successes of the X ray analysis in giving us the accurate geometry of some organic substances, and in particular the long chain compounds, has led to its tentative application in some difficult cases where an answer would be of great scientific or industrial value. It was natural that an early attempt should be made to investigate the structure of cellulose. The problem was especially difficult because the crystals of cellulose are so minute; the arrangement which X ray analysis depends on for its usefulness is present in the cellulose mass, but the mass consists not of one crystal, but an immense number of small crystals in disordered array. This adds greatly to the difficulties of the X ray technique. Moreover, the chemistry of cellulose had not, when the work began, been perfectly worked out; and it is a great help to the determination of structure if the composition of the molecule is first known. Nevertheless, the persistent attacks on the problem seem now to have attained success, at any rate as regards the more important features of the design. There may be modifications of detail yet to come. This work is largely due to H. Mark and his collaborators, first at the Kaiser Wilhelm Institut in Berlin and recently at the research laboratories of the I.G. Farbenindustrie Aktiengesellschaft at Ludwigshafen.

The solution of the cellulose problem is a step on the way to the more complicated cases of wool, hair, and muscle. Let me therefore sketch very briefly the present position of the cellulose investigations. In this I am following Mark's account, versions of which are to be found in various German journals, scientific and industrial.[1] Other cellulose workers, for example, K. Hess and his collaborators, are not in complete agreement as to the interpretation of the results so far obtained. But my present purpose is rather to show how the research is being pushed forward than to give a critical examination of the various methods of procedure.

Glucose.

Mark assumes the structure of the glucose molecule as suggested by Prof. Haworth of the University of Birmingham. According to the conventions of chemistry it is expressed so:—

Fig. 5.



The backbone of the molecule is the chain of six carbon atoms joined together by diamond bonds. The diagram shows a curious linking of the first atom of the chain to the fifth by way of a single oxygen. If we would picture to ourselves the actual arrangement in space of the atoms in the glucose molecule, we must imagine that the major portion of the carbon chain is bent round as to form, with the oxygen, a hexagonal ring. We are quite familiar with carbon chains which are bent round to form rings: the immensely important case is the six-membered ring of benzene. The enormous development of organic chemistry rests largely on the discovery of the benzene structure, and it is an essential portion of the chemical theory that the atoms of the ring are bound together by very strong bonds. It is not surprising, therefore, that X ray analysis of benzene derivatives has found a centre-to-centre distance in the ring which agrees very closely with the corresponding distance in diamond—viz., 1·5 A.U. (Angstrom Units). The centre-to-centre distance in the combination of carbon and oxygen can also be determined from the X ray investigation of various substances, such as calcite, where the oxygens and carbons are strongly tied together. It varies from 1·2 to 1·3. It is important to observe that centre-to-centre distances can be expected to be similar only under similar circumstances. When oxygens lie close together, as in the silicates, but are not tied together by bonds of the strong sort, they behave as comparatively large spheres having a diameter of 2·7 A.U. My son and his colleagues at Manchester have shown that these large oxygen atoms are packed tightly together to form the bulk of the earth's crust, being held together by the relatively smaller atoms of silicon, aluminium, magnesium, and others.

In the glucose ring we should expect the oxygen atom to behave as a smaller atom, as it does in substances where it is equally tightly bound. The glucose ring, according to the diagram of Fig. 6, must have much the same dimensions as the benzene ring.

Two glucose molecules combine, according to Haworth, to form one molecule of cellobiose, in a manner represented by the formula. The join is effected between the first carbon atom of one ring and the fourth of the other. One oxygen and hydrogen pair, a so-called hydroxyl group, on each of these atoms is broken up; two hydrogens and one oxygen are removed, forming a molecule of water, and the remaining oxygen is the link between the two chains.

[1] For example, Die Struktur der Zellulose und ihre technische Auswirking, Melliand Textilberichte, Heidelberg, 1929, Nr. 9; or Über den Bau des Krystallisierten Anteils der Cellulose II., Zeit. Phys. Chem., Abt. B, Bd. 2, Heft 1–2.

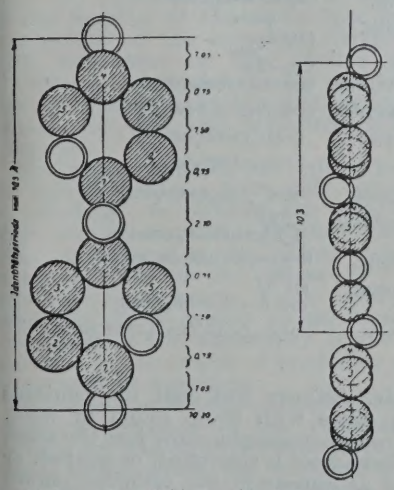
We may represent this by the model shown in Fig. 6 which is due to Mark, the dimensions of the model being in accord with previous X ray work on other substances.

In exactly the same way other glucose molecules may be connected up with the cellulose pair, and in fact a long chain may be formed resembling the simple carbon chain in the existence of strong linkages all along the line, though the links themselves are more complicated. The dimensions of the structure are shown in the diagram; there is a perfect periodicity of 10·3 A.U. along the line, and an imperfect periodicity of half that amount. Any one ring can be made to coincide with its neighbour by moving it 5·15 A.U. along the line and turning it round the line through 180°. There is, in crystallographic language, a screw axis.

This structure, we must remember, is arrived at by combining Haworth's chemical determination with the results of X ray measurements on the diamond and other crystals. The next step is to bring the X ray analysis to bear on the structure itself.

An X ray diagram is not so easily obtained from cellulose as from a substance more simple in its crystallisation, but careful technique has finally given results which are sufficient for the test of the supposed structure. It is found that agreement is excellent. The X ray diagram of a substance built of cellulose—e.g., ramie fibre, shows a perfect periodicity of 10·3 A.U., an imperfect periodicity of half that amount, and a screw axis. There is, therefore, good reason to suppose that the structure of Fig. 6 is actually existent in cellulose.

FIG. 6.



Model of cellobiose.—Shaded circles represent carbon atoms; oxygen atoms are drawn as double rings to show the limits between which their diameters probably lie. This model, due to Mark, shows two glucose rings, stripped of atoms unessential for the purpose of showing the method of combination, and joined together by an oxygen to form the kernel of the cellobiose molecule. Two views of the model are shown. It should be compared with the diagram of Fig. 5.

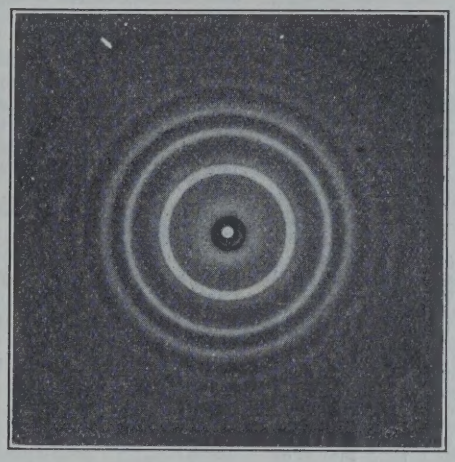
CHAINS TO CRYSTALS.

But the picture is not yet complete. In what way do these long chains combine to form the minute crystals? If we go back to the simple carbon chains we find them arranging themselves side by side, like cornstalks in a field; a sheet is formed in which the long molecules lie transverse to the sheet. The whole crystal is formed of many such layers lying on one another like the leaves of a book, as we found in graphite. Usually a mass of such a substance as stearic acid consists of a multitude of little crystals formed in this same way, the separate crystals lying in disorder with respect to one another. A single crystal, or perhaps one should say a mass of crystals nearly aligned to one another, is not easy to find, but, when found, is of great assistance to analysis. Good single crystals of stearic acid have actually been obtained and examined, so that the structure is well known. The chains of stearic acid are all of the same length and the layering is perfect. I ought to add that it is when we have such combinations of chains into single crystals that the X ray effects are most observable and valuable.

We are led to expect something of the same kind in cellulose, and it is actually found to exist. Cellulose chains do lie side by side in little bundles. The X ray diagrams tell us that there are periodicities not only along the chain but also in the side-by-side arrangement of the chains. The diagram of Fig. 6 shows the design of the structure and the dimensions as given by Mark.

It is possible to go one step further, and to find in the X ray diagram some information as to the size of the bundles in which these regular chains are arranged in regular fashion. This is done with the help of a certain principle of optics. If the spots in the diagram are sharply defined the minute crystals must be big enough to contain thousands of molecules, but when the number is small the spots are diffuse. From the appearance of the spots Mark deduces that there may be twenty to fifty links in each chain and that some dozens of chains go to the making of a bundle. The bundle corresponds to what has been called a "micell." Our picture is now fairly complete. The atoms form the glucose rings; the rings are linked together by strong bonds into a chain; the chains are drawn together side by side by much weaker forces; and a bundle of chains forms a micell.

FIG. 7.



Cystine.—This kind of diagram, due to W. T. Astbury, is typical of a substance consisting of a multitude of very small crystals, not arranged with respect to each other.

If a fibre is thus composed we should expect that when it is stretched the bundles are brought more or less into line. The X ray diagram shows at once that this is the case. When a fine pencil of X rays is passed through a specimen in which the crystalline bundles lie anyhow, rings are formed upon the photographic plate, as in Fig. 7, but when the fibre is stretched in a direction at right angles to the X ray pencil the direction of stretching must be somehow reflected in the picture, and indeed we find the rings drawing themselves together into spots along their circumferences until finally we obtain a diagram of spots approaching to the effect shown in Fig. 2, which it will be remembered is due to a single crystal.

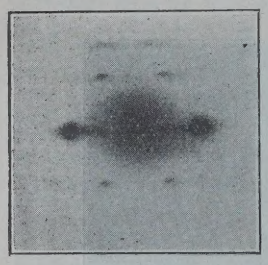
STRETCHING OF FIBRES.

When a stretching force is gradually applied to a fibre there is, for small forces, a complete recovery as soon as the stress is removed. The small bundles are being pulled into alignment, but not so as to break any attachments. As the force increases some of the attachments are broken, but the bundles now get the benefit of lying more nearly parallel to one another and so of being in better position to exert their sideways attachments; in this way the increasing stress is resisted. But when all

has been done that can be done in this way, a still larger stretching force will cause the bundles to slide past one another like threads that have been dipped in some sticky fluid. The substance *flows* and finally breaks.

It is clear that to pull a bundle in two would require the breaking of the strong bonds in the separate chains; if this marked the limit of the strength of the fibre it would, as Mark has pointed out, be many times as strong as steel. And why not? The links between atom and atom in a diamond are usually much more difficult to break than those between the atoms of a metal. A fibre breaks for a different reason—namely, that the side attachments of the chain and bundles are not able to prevent the chains from sliding past one another. It is strange to think that the spinning of a thread, which is designed to place the fibres in such a way that they resist being drawn past each other, is exactly what is done on an exceedingly minute scale in the structure of the fibre itself.

FIG. 8.



X ray diagram of mercerised cellulose.—This diagram, due to R. Andress, is similar in character to that of Fig. 2; it has comparatively few spots because the cellulose material does not present the simple problem of the single crystal. If it is examined carefully it will be observed that many of the spots are drawn out horizontally, but not vertically. The interpretation is that during mercerisation the long chains are pushed away from one another by varying amounts because foreign molecules wedge them apart. The chains themselves are not broken.

It would take too long to describe how on this point of view the effect of wetting alters the strength of a fibre; how the mercerisation of cotton pushes the chains apart without altering their length (see Fig. 8); why it was difficult in the first manufacture of artificial silk to avoid unevenness in gloss and in receptivity to dyes, and many other more or less complete explanations of industrial problems.

Let me now proceed to consider what has been done towards the application of the X ray methods to animal substances. Cellulose occurs in animal as well as vegetable structures, and is found to have the same form in both. Leaving this on one side we come to a vast range of substances which make up the living body, and if the X rays can show anything at all we are obviously in front of a series of very interesting researches.

HAIR AND WOOL.

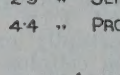
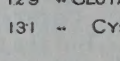
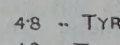
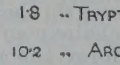
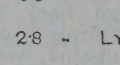
Just as the X ray examination of cellulose has been pressed forward in order to obtain a better understanding of the properties of cotton and artificial silk, so also, in the interests of the textile industries, it has been applied to the study of hair and wool. The problem is far more difficult because the animal fibres are complicated mixtures of many constituents. Below is a list of the substances obtained from the hydrolysis of wool; I owe it to Mr. W. T. Astbury, of the Textile Research Department of the University of Leeds.

The complexity of this list shows at once why the work with wool is not so far forward as in the case of cellulose. Enough has been done, however, to show that apart from characteristic differences there is a great similarity in the general behaviour and construction of the two.

To begin with we have the well-known fact that the behaviour of the two classes of fibre under stretching forces are very much alike. There is the same reversible effect for small forces, and the same region of irreversible effect for larger forces. The effect of moisture and of heat are in the main parallel. It is true that wool has a greater power of recovery, and that wetting has a peculiar power of facilitating recovery, as if water could act as a lubricator, removing certain frictional effects and allowing the restorative forces to act. But such differences may readily be ascribed to the known differences in composition. If the physical properties of cotton are explicable on the hypothesis of micells composed of long chain molecules, it would be difficult to ascribe the behaviour of wool to some entirely different mechanism.

But apart from this general conclusion, the X ray evidence argues strongly in the same direction. It is possible to obtain X ray photographs with single fibres of hair and wool, and these show the same characteristics as cellulose. There are obviously small bundles of arranged molecules. Sometimes the bundles may show much disorder of arrangement, but in general the stretching of the fibre is accompanied by changes in the photograph which show an increasing alignment. Some of the spots on the photographs become very clear as the tension is increased, and Astbury finds that these indicate a size for the unit of pattern which has also been found in natural silk. This may possibly be due to the fact that two of the amino-acids of the table—viz., alanine and glycine—are found in silk also. The fine X ray photograph of

100 GRAMS OF WOOL, ON HYDROLYSIS, GIVE:-

0·6 Gm.	GLYCINE	$CH_2NH_2.COOH$
4·4 ,,	ALANINE	$CH_3.CHNH_2.COOH$
2·8 ,,	VALINE	$CH(CH_3)_2.CHNH_2.COOH$
11·5 ,,	LEUCINE	$CH(CH_3)_2.CH_2.CHNH_2.COOH$
2·9 ,,	SERINE	$CH_2OH.CHNH_2.COOH$
4·4 ,,	PROLINE	
2·3 ,,	ASPARTIC ACID	$COOH.CH_2.CHNH_2.COOH$
12·9 ,,	GLUTAMIC ACID	$COOH.CH_2.CH_2.CHNH_2.COOH$
13·1 ,,	CYSTINE	
4·8 ,,	TYROSINE	
1·8 ,,	TRYPTOPHANE	
10·2 ,,	ARGININE	$NH:C(NH_2).NH.CH_2.CH_2.CH_2.CHNH_2.COOH$
6·9 ,,	HISTIDINE	
2·8 ,,	LYSINE	$CH_2NH_2.CH_2.CH_2.CH_2.CH_2.CHNH_2CO_2H$

cystine which Mr. Astbury has sent me contains three lines which agree with those found in wool. In general, the X ray photographs show just the same sort of changes where wool is stretched, or wetted, or chemically treated as appear in the cellulose photographs, allowing for the greater complexity of the case. Clearly there is an immense amount of work yet to be done before each of the wool constituents can be examined as to its structure, but there can be no doubt that in general there must be the same kind of arrangement in wool as in cotton. And what is found in wool and hair will surely be found in nerve and muscle.

A COMMON PRINCIPLE.

The suggestion forces itself on the mind that one and the same principle is in constant use by Nature to form living tissues which have strength and resilience, which may also be overstrained and finally broken. The adjustment of the means employed is a very striking feature of the scheme. Along the molecular chain strong bonds, of the same class as those that make the diamond, hold the links together and give the chain comparative permanency; lesser forces bind the chains into ordered bundles or micells and the micells into the general mass. I think we may justly say that we have now in our hands a method of analysis which has not only confirmed previous results in a novel manner but has opened up new ways for the study of living matter.

THE ÆTIOLOGY AND PROPHYLAXIS OF POST-ANÆSTHETIC SICKNESS.*

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EVERY anæsthetist must be conscious of the rapid progress which surgery has made in recent years. It is true that anæsthetics made modern surgery possible, but surgical technique to-day has outstripped anæsthetic technique and, it seems to me, threatens to leave our specialty behind.

Some of the delay in post-operative convalescence and a percentage of post-operative mortality might quite properly be assigned to the after-effects of the anæsthetic and its administration, and modern surgeons at home and abroad are turning to local and regional methods of anæsthesia in an endeavour to avoid the evil after-effects of general anæsthesia upon the patient. The clamant demand of surgery is for an anæsthesia which will at least not militate against the post-operative convalescence or recovery of the patient. It is obvious that if the status of the anæsthetist is to be raised and the importance of anæsthetics recognised by the surgical world and the public, then the anæsthetist must accept a larger share of responsibility for the surgical patient both before and after anæsthesia.

Vomiting.

The chief factors involved in the act of vomiting are: (1) violent contraction of the diaphragm and of the muscles of the abdominal wall; (2) violent contraction of the muscular fibres of the stomach with relaxation of the cardiac sphincter; and (3) reversed peristalsis in the small intestine, giving rise to relaxation of the pyloric sphincter and the passage of bile and intestinal contents into the stomach.

The vagus, phrenic, and spinal nerves as well as the sympathetic are intimately concerned in the act of vomiting. In retching the same parts come into play, except that the cardiac sphincter does not relax and there is no violent contraction of the muscular coats of the stomach.[1 2 3] Nausea is the sensation of sickness which precedes the act of vomiting. It is caused by an increased tension in some part of the alimentary tract; if this tension increases to the extent of producing pain, the nausea culminates in vomiting.

Post-anæsthetic sickness and retching occur as the result of irritation of the vomiting centre in the medulla by stimuli from three main sources: (1) the direct action upon the vomiting centre of toxins circulating in the blood stream; (2) the indirect action of reflex stimuli which reach the vomiting centre through afferent nerve-fibres in the stomach, intestine, peritoneum, bronchi, and special senses, and those set up by pathological conditions in the patient; and (3) the influence of the higher brain upon the vomiting centre. This last varies widely in individual cases and is very difficult to estimate, but evidence is accumulating to show that the faculties of emotion, imagination, anxiety, and reason may create such a disturbance during the pre-anæsthetic period as to excite active sickness in the post-anæsthetic period.

Even the mild type of post-anæsthetic sickness is of the highest importance to the patient, the surgeon, and the anæsthetist for the following reasons:—

(*a*) It is a source of much post-operative discomfort, misery, and distress to a considerable percentage of patients, especially after abdominal operations.

(*b*) In the mind of the patient it is frequently the most serious objection to any future surgical interference.

(*c*) It frequently prolongs convalescence and may actually turn the balance against recovery. There is little doubt that vomiting is an important element in the production of post-operative adhesions and hernia. These are usually difficult cases both to the anæsthetist and the surgeon.[4] The peritoneum may have been difficult to close and, as the result of some such effort as vomiting, a piece of omentum bulges through, ultimately forming a ventral hernia or, with further effort, a rupture of the abdominal wound.

(*d*) It is a familiar sequela of every anæsthetic agent, even gas-and-oxygen, and may follow any method of administration: endotracheal, colonic, spinal, and local infiltration.

(*e*) It is a standing reproach to anæsthetics and the anæsthetist, and not less to surgery and the surgeon. The subject has not received from any member of the surgical team the attention it deserves, and as a consequence our knowledge of how to recognise, in the individual case, the factors which predispose to post-anæsthetic sickness is very circumscribed, while our treatment is empirical and largely devoted to curative rather than to preventive measures.

In my experience there are four outstanding predisposing factors to post-anæsthetic sickness—namely, the psychic element in the patient, the preoperative preparation, the anæsthetic agent and its administration, and surgical trauma.

The Psychology of the Patient.

The influence of the phenomena of the mind is present throughout the conscious, subconscious, and unconscious state of anæsthesia, and the personal peculiarities of physical and mental organisation known as temperament—in the one case phlegmatic and in the other emotional—dominates, in many patients, the whole pre-anæsthetic, anæsthetic, and post-anæsthetic period.

1. *The Pre-anæsthetic Period.*—It has been stated that "dread of the anæsthetic is the arch-enemy of the anæsthetist,"[5] but much more is it the arch-enemy of the patient. The effect of apprehension, fear, dread, or anxiety regarding the operation or the anæsthetic, and their success or failure, is underestimated. Much will depend upon whether the particular emotion has been expressed or repressed during the pre-anæsthetic stage.[6] If the former, it may be confidently expected that the post-anæsthetic effects will be reduced to a minimum, whereas in the latter they are usually increased to a maximum. The unusual environment of the hospital or nursing home disturbs the patient's mental equanimity in no ordinary degree. This emotional state engenders anorexia, with much diminished carbohydrate consumption. It inhibits the secretory function of the gastro-intestinal tract and its concomitant glands and impairs digestion, assimilation, and motility.

Glycosuria is not uncommon in the pre-anæsthetic period. It may be first detected on the morning of the operation. If the urine contained no sugar on previous examinations it may be taken that the sudden appearance of glycosuria is due to pre-anæsthetic emotional metabolic disturbance. It is held by psychologists and physiologists that the primary cause is an emotional stimulation of the suprarenal glands with an excessive secretion of epinephrine[7 8] which, on the one hand, depresses the gastro-intestinal function and, on the other, excites an abnormal breaking down of liver glycogen with resulting hyperglycæmia and glycosuria.

Pain—acute, continuous, or recurrent—controls in a remarkable degree the psychic element in the surgical patient. It appears to increase the safety and simplicity of general anæsthesia and to modify the after-effects.

This explains why obstetric patients are anæsthetised so easily and recover so well. In the surgical patient anxiety arises partly from fear that the surgeon may commence the operation before they are properly asleep or that they may not wake out of the anæsthetic, and partly from dread of what may be found at the operation or that they may not recover. This mental agony may have continued for several days. In obstetrics and to some degree in emergency surgery the opposite condition prevails. Here the anxiety is to get an anæsthetic to relieve the pain; the patient is confident not only that she

* Being the presidential address to the Scottish Society of Anæsthetists on Oct. 26th, 1929.

will waken but that when she does her pain and trouble will have disappeared.

2. *The Ancesthetic Period.*—The ordeal to a patient of entering an anæsthetic room and meeting there for the first time the anæsthetist—a person about whom the patient was not consulted, probably never saw before, and whose name conveys nothing—has to be experienced to be understood. From the practical, humane, and economic point of view there can be no doubt that a visit from the anæsthetist on the day preceding the operation, the examination and assurance that all is well for the anæsthetic, a friendly greeting when the patient arrives in the anæsthetic room, and a word of encouragement as he halts on the brink of oblivion do much to create and maintain the anæsthetic equanimity so essential to the well-being of the patient before, during, and after operation.

The sensation of tension in the head or of suffocation or of strangulation which may occur in the early stage of the induction is a very real and dramatic one. It gives actual form to the emotional apprehensions of the pre-anæsthetic stage and creates the mental impression of impending disaster. The climax is reached in the second stage of the induction when acute brain-storms break over the patient. These are expressed in sudden excitement, active resistance, and rigidity followed by depression and exhaustion of the vital medullary centres. Is it surprising that the psychologist is interested to known what the post-anæsthetic effects of these profound impressions are and whether there are any prophylactic measures which might reasonably be taken to protect the patient?

For practical purposes the conscious mind, the sensation of pain, and the cortical reflexes are out of action during surgical anæsthesia. On the other hand, it appears that the subconscious and unconscious mind of a patient under surgical anæsthesia may be abnormally active and alert. I have frequently noted that in the course of even a short anæsthetic, years of personal history, long forgotten or recent, pleasant or otherwise, may be reviewed by the patient, with corresponding consequences in the returning consciousness. The normal control of the spinal reflex by the upper neuron is in abeyance during the early stage of surgical anæsthesia, and the knee-jerk and ankle-clonus are both exaggerated. Ether tremor arises in the same way and all three disappear in deep surgical anæsthesia, to become exaggerated again in the early recovery stage of anæsthesia. In surgical anæsthesia the optic thalamus forms an important subcortical station for the reception of sensory stimuli, especially those of pain and visceral sensation. The shrugging of the shoulder—usually the left—the local muscular rigidity which frequently occurs in exploration of the upper abdomen, and the moaning and sobbing which may accompany exploration of the female pelvis arise from local sensory stimuli which reach the optic thalamus and produce a passive protest against indelicate handling of the abdominal or pelvic contents.

These points have been emphasised to show that processes of nerve excitement and exhaustion, begun in the pre-anæsthetic period, may continue and gain force throughout surgical anæsthesia and cause profound disturbance to convalescence.

3. *The Post-anæsthetic Period.*—Sickness and vomiting often occur in the subconscious stage of the return journey from unconsciousness in anæsthesia. Every anæsthetist is familiar with the clinical picture of approaching sickness upon the table. This subconscious vomiting is probably due either to the awareness by the cortical brain cells of stimuli which reach them from the operation area or to the lesser influence of the anæsthetic on the medullary centres. The patient has no consciousness or memory of this vomiting on the table.

Local infiltration of the operation area with ¼ per cent. or ½ per cent. novocaine appears to protect the patient against stimuli reaching the vomiting centre, even when the ocular reflexes have returned. I have often observed in the process of de-etherisation that patients who have had novocain show clinical signs of approaching sickness much less frequently than those who have had no infiltration analgesia. The more rapidly the patient is de-etherised the more likely is retching or vomiting to occur upon the table and to discontinue thereafter.

Much more frequently vomiting occurs first in the conscious stage of the recovery from anæsthesia and recurs at intervals during 12–24 hours. Children are less liable to post-anæsthetic sickness than adults and infants less than children. Several factors may account for this. In infants and children the preparation for anæsthesia is much less an interference with Nature, the condition demanding surgical intervention is more often the only pathological process at work, and the psychic disturbance during the pre-anæsthetic period is much less pronounced, since emotion, imagination, and anxiety are immature. Gas-and-oxygen is much more often the anæsthetic of choice, and the duration of the anæsthesia and the surgical trauma are on an average less than in adults. Probably the most important factor is that in infants and children the central nervous system is less specialised, and the higher brain neither receives nor redirects afferent stimuli to the same degree as in adults. Animals rarely suffer from post-anæsthetic sickness, irrespective of the anæsthetic agent or the duration of the anæsthesia (Table I.).

TABLE I.—*Sickness in 500 Cases.*

250 children.	Under 1 year.	1–2 years.	2–5 years.	5–12 years.	Total.
No. of cases ..	40	42	66	102	—
No. sick	5	8	12	15	16 per cent
Male	3	3	7	7	20 cases.
Female.. ..	2	5	5	8	20 „

250 adults.	12–18 years.	18–35 years.	35–50 years.	Over 50 years.	Total.
No. of cases ..	45	95	65	45	—
No. sick	30	80	40	25	70 per cent
Male	16	42	21	10	89 cases.
Female.. ..	14	38	19	15	86 „

Preoperative Preparation.

In the preparation of the surgical patient there is a misdirected zeal which dies hard. The nearer the patient can be brought to or allowed to remain in the normal standard of physiological efficiency, the easier and less interrupted will the convalescence be. One of the surest methods of reducing a patient's vitality and resistance to infective processes is to subject him to purgation, enemata, and starvation. It is the proverbial burning of the candle at both ends.[9]

Purgation.—In recent years our views regarding preoperative aperients have undergone considerable change, but in my estimation they are still drastic and require further modification. If the patient has had a regular daily stool, then the less the normal is disturbed the better, both upon the operation table and during convalescence. There is no objection to a mild aperient such as cascara, compound liquorice, or milk of magnesia 48 hours before operation, but any complete or watery evacuation of the gastro-intestinal tract, such as results from castor oil or sulphate of magnesium, promotes conditions which tend to handicap the patient, the surgeon, and the anæsthetist; more especially if the aperient is given, as so often happens, 12 hours before operation. A drastic aperient given to a patient in the unusual surroundings of the hospital or the nursing home not only disturbs and actually interrupts the rest and sleep so essential to normal physical vitality, but agitates the mind and dissipates the nerve energy which should be conserved for what may be the ordeal of his or her life. It irritates the mucous membrane of the intestinal tract and renders it red and swollen, while the gut may be empty and collapsed or distended with gas

the worst possible conditions for surgical intervention and technique. Further, it depletes the body of essential fluid containing chlorides. It hurries partially digested food along the intestinal tract, producing fermentation, tympanites, abdominal distension, and much discomfort. It produces excessive peristalsis, exhausts the muscular coats of the intestine, and is a fruitful cause of paralytic ileus.

Enemata.—There is no part of the preoperative preparation which more disturbs the psychic balance of the patient than the time-honoured enema, which often seems to be considered the necessary complement to drastic and complete evacuation of the gastro-intestinal tract. By the majority of patients the enema is anticipated with dread, borne with patience and courage, and remembered with apprehension. An enema on the morning of the operation not only curtails the patient's rest and sleep but stimulates and exhausts the lower bowel. Apart from rectal cases, it is difficult to follow the rationale of this measure in the routine preparation of surgical cases, and I am of opinion that except in special cases it is definitely detrimental to the best interests of the patient.

Has the surgeon any views upon the matter, or has the anæsthetist? If so, why is such an important item in the preoperative preparation of the patient left largely to the discretion of the nursing staff? My own view, as an anæsthetist, is that drastic evacuation of the gastro-intestinal tract and irritating enemata not only reduce the surgical patient's physical and nervous vitality and thus delay convalescence, but are potent factors in the causation of post-anæsthetic nausea, vomiting, tympanites, and paralytic ileus.

Starvation.—Any considerable modification of the preoperative diet or nutrition of the patient, such as tends to produce inanition or disturb metabolism, is highly detrimental to post-anæsthetic convalescence. The inanition may arise in several ways. It frequently happens that food has been withheld or that there is no appetite, or that the food is taken and promptly ejected, or that the power of digestion and assimilation is temporarily altered. There is no question about the power of the mind over the processes of digestion and absorption, and even the suggestion of an anæsthetic or of an operation is sufficient in some people to produce anorexia, immotility of the alimentary tract, and defective digestion of its contents.

I am convinced that in many cases too little time is spent by the nursing staff in attempting to coax or persuade the surgical patient to take food. It may not be good manners but it is certainly good policy, for food is the agent which produces normal gastro-intestinal peristalsis; it should be given in abundance and in an easily digested, semi-solid form right up to within a few hours of the time of operation. Carbohydrates have a much greater preoperative aud post-operative food value than proteins, and yet the cup of beef-tea or bovril is offered when a teaspoonful of glucose or a cup of weak tea with plenty of sugar would do infinitely more good. The absorption of carbohydrate commences almost as soon as it is taken, and it has been shown that the amount of sugar absorbed per hour is constant for four hours if a sufficient quantity has been given.[10]

One of the conditions which definitely alters the absorption of carbohydrate is starvation. The coefficient of absorption of carbohydrate after 24 hours' starvation was found experimentally to be 0·266 g. per 100 g. of body-weight per hour, whereas after 48 hours' starvation this figure was reduced to 0·178 g. per 100 g. of body-weight per hour.

Any deficiency of carbohydrate in the diet rapidly causes a diminution of the glycogen stored in the liver. It appears that this depletion of the liver glycogen is but a temporary phase and that the glycogen content rapidly increases and remains more or less constant throughout the period of carbohydrate deficiency. The loss of liver glycogen is presumably made good from the storage of glycogen in the muscles and from the protein of the tissues. It is at this stage and in this way that the general metabolism of the surgical patient is first disturbed. The complete oxidation of fat depends upon the normal carbohydrate content of the blood and tissues. As a result of the incomplete oxidation of fat, oxybutyric and diacetic acids are produced with acetone as a by-product. Any degree of ketosis is generally recognised as an exciting factor of post-anæsthetic sickness.

Many surgical patients appear to be the potential victims of a vicious circle before they reach the operation table: (1) starvation and purgation producing hypoglycæmia; (2) hypoglycæmia causing incomplete oxidation of fat; (3) the products of incomplete oxidation of fat causing ketosis; (4) ketosis possibly causing post-anæsthetic sickness; (5) vomiting producing hypoglycæmia.

The Anæsthetic Agent.

The anæsthetic agent has too long been made the scapegoat of post-anæsthetic sickness, whereas it is at most only an isolated factor in the ætiology, and in many cases has no responsibility. There are patients who tend to have post-anæsthetic sickness irrespective of the agent used to produce anæsthesia. They belong to the highly emotional type whose endeavours are concentrated upon concealing their dread and apprehension of the operation and the anæsthetic and who volubly express their complete indifference to both. Bitter experience has taught me to regard their repressed emotion with suspicion; in the language of Shakespeare, "methinks the lady doth protest too much." Here is the record of such a patient.

A female, aged 50, was to have perineal repair and hysteropexy done in two stages. Every precaution was taken in her preparation. She indulged in loud laughter, and emphatically asserted that she was pleased to have her anæsthetic and operation. It was an easy gas-and-oxygen anæsthesia with a trace of ether, but she was actively sick for three days. Two weeks later the hysteropexy was done. Increased precautions were taken against a repetition of the sickness and the patient expressed, with much laughter but no tears, that she had neither dread nor fear of the anæsthetic or the operation. Gas-and-oxygen plus ether was given and as on the previous occasion she was very sick for two days. Examination of the urine, vomit, and blood gave no clue to the ætiology, and I was forced to the conclusion that this was a case of repressed emotion irritating the medullary centres and producing post-anæsthetic sickness.

There is another type of patient who suffers post-anæsthetic sickness with local infiltration or regional analgesia but not with a general anæsthetic. This type has a dread of being awake during the operation, and the nerve tissue suffers immeasurably more irritation with local or spinal than with a general anæsthetic (Table II.).

TABLE II.—*Anæsthetic Agents and Method of Administration.*

250 children.	E.	Ethyl chloride+E.	N_2O+O_2 +E. Bag.	N_2O+O_2 +E. Endo-tracheal.	N_2O+O_2. Bag.
	Open or per-halation.				
No. of cases	25	20	145	30	30
No. sick ..	10	10	15	2	3

250 adults.	E.	Ethyl chloride+E. Perhala-tion.	N_2O+O_2 +E. Bag.	N_2O+O_2 +E. Endo-tracheal.	N_2O+O_2. Bag.
No. of cases	50	100	50	40	10
No. sick ..	45	92	23	10	5

In general hospital anæsthetic practice the agents most frequently used are ether (open, perhalation, closed, colonic, or endotracheal), or ethyl chloride and

ether, chloroform, gas and oxygen with or without ether, local infiltration of novocain, or spinal analgesia. The largest percentage of post-anæsthetic sickness occurs after some form of ether anæsthesia. There are various ways in which the anæsthetic agent may predispose the patient to sickness, and the particular system through which the vomiting centre is stimulated is largely determined by the susceptibility of the individual. In one case it may be by the direct toxic action of the anæsthetic agent carried by the blood stream to the vomiting centre in the medulla. In another it may be by afferent stimuli which reach the vomiting centre through nerve-endings in the stomach and bronchi or the organs of taste and smell.

Evidence is accumulating that in all cases of general anæsthesia the quantity and quality of the internal secretions of such organs as the suprarenals, the pituitary, the liver, the pancreas, and the thyroid are much disturbed before, during, and after the administration.[11 12] For example, an ether anæsthesia stimulates the suprarenal glands and they secrete an excess of epinephrine which stimulates the breaking down of the glycogen in the liver, resulting in a hyperglycæmia which may overcome the renal threshold and cause glycosuria. In a series of estimations of the blood-sugar before, during, and after ether anæsthesia I found that it gradually rose from the normal level, 0·1 per cent., to 0·2 per cent. and even 0·25 per cent., and remained at this high level throughout the administration. There was no evidence of any reduction of the percentage of blood-sugar during prolonged anæsthesia and it only very slowly came back to normal on cessation of the anæsthetic. It has been demonstrated by experiment on animals that the injection of adrenalin will produce hyperglycæmia and that the hypoglycæmia which arises from the injection of insulin, when the carbohydrate in the blood and tissues is deficient, can be modified or actually counteracted by the administration of adrenalin.

Further, it is claimed that the secretions of the pituitary and thyroid glands play an important part in the metabolism of carbohydrate and that the danger of hypoglycæmia following upon injection of insulin is much diminished if a dose of pituitrin is given along with or immediately following the insulin. This partly explains the benefit to the patient from repeated small doses of pituitrin or adrenalin after an operation. Thus, as the result of ether anæsthesia the suprarenals are stimulated and liver glycogen is broken down in excess, resulting in hyperglycæmia, followed in the post-anæsthetic period by exhaustion of residual epinephrine and depleted body glycogen, with a potential hypoglycæmia and ketosis in each case.

The influence of morphia as a factor in post-anæsthetic sickness depends upon the susceptibility of the individual patient, and my experience in the great majority of cases is that the evil effects of preliminary morphia are far outweighed by the measure of repose, well-being, and indifference with which the patient arrives in the anæsthetic room. The duration and depth of anæsthesia have an important bearing upon post-anæsthetic sickness, and closely allied is the dangerous factor of incipient anoxæmia.

Surgical Trauma.

There are surgeons whose dexterity and gentleness in handling tissues is such that it almost appears of small consequence what anæsthetic agent is used, for their patients are already in a fair way to an easy and rapid convalescence. From the anæsthetist's point of view the surgeon who pushes his first through a small opening in the peritoneum aud sweeps from liver to spleen and forthwith digs into the pelvis, is doing incalculable damage, from which the patient will suffer in the post-anæsthetic period. It is here that the surgeon and anæsthetist, working in complete harmony and with one aim in view—namely, the conservation of every particle of energy, physical and nervous, can perform prolonged and difficult operations with the minimum of evil effects.

Prophylactic Treatment.

At the present moment there is no preventiv treatment known that will protect every surgic case against post-anæsthetic sickness. The ætiologic factors at work are so diverse that only by the stud of the individual case can we hope to make an progress in this important subject.

Let me indicate the lines along which, it appea to me, the anæsthetist ought to work.

1. The surgical patient should come under th preanæsthetic supervision of the anæsthetist at th earliest moment after reaching the hospital or nursin home and should remain under his supervision unt the danger of post-anæsthetic sequelæ has passed.

2. Purgation and enemata should only be done b the express instructions of the surgeon and in ordinar cases never within 48 hours of the operation.

3. Starvation should not include more than on meal before operation. It is very important t maintain a high glycogen content of the liver an muscles; to accomplish this not only should foo rich in carbohydrate be continued until within a fe hours of operation, but it should be given at th earliest possible moment after, in the form of orang juice, sweetened water or tea, or glucose wit pancreatin. It is essential that the patient b encouraged in this course.

4. Insulin was hailed as a specific against pos anæsthetic sickness,[13–16] but it was soon realise that insulin in the absence of a sufficiency of carbo hydrate was a dangerous agent. It is not easy t be sure of the absorption and oxidation of carbo hydrate[17] when given per rectum, and I doub whether there is any justification for giving insuli in routine cases except in conjunction with intra venous glucose saline.

5. Stomach lavage before and after the anæstheti is a procedure which in my experience has conside able merit and deserves to be more extensivel practised. Normal saline solution with 10–20 pe cent. glucose is excellent for the purpose, and a fe ounces of the fluid should be left in the stomach afte each lavage.

6. Intravenous hypertonic saline solution has bee used after critical operations, in many cases wit most brilliant results, including the absence of an post-anæsthetic sickness.

7. In order to combat any tendency to acidosis o depletion of the alkaline reserve it has been customar for anæsthetists and surgeons to prescribe alkalin fluids. From recent experimental work by Haldane[18] and Goldblatt[19] it appears that the ingestion o sodium bicarbonate in such amount as is likely t produce any degree of alkalosis is fraught with th danger of causing ketosis. Goldblatt has shown i rats that the ingestion of sodium bicarbonate no only hinders the metabolism of carbohydrates an the deposition of glycogen in the liver and muscle but that it prevents complete oxidation of fat wit resulting acetonuria.

8. The anæsthetist ought to make an accurat estimate of the surgical risk involved, both immediat and remote. Such an examination makes the pleasan impression upon the patient that every precaution i being taken for his safety and comfort. It i important that the anæsthetist should conduct himsel during his visits with a quiet optimism and thu engender in the patient assurance, equanimity o mind, appetite, and sleep.

9. The anæsthetic should be chosen with due con sideration for the patient, the surgeon, and th duration of the operation. The chief point regardin the anæsthetic, after the agent and the method o administration have been decided, is that th minimum which will produce efficient anæsthesi should be used throughout the operation. Anæs thetists tend to forget that the ideal in anæsthesi is not how deep with safety to the patient, but hov light with efficiency to the surgeon.

10. Anoxæmia should be carefully avoided through out the operation by supplying oxygen, and de-etheri sation practised by hyperventilation with carbo

dioxide.[20] This procedure corrects and maintains the acid-base balance of the blood and restores tone and peristalsis to the gastro-intestinal tract.

11. The patient should be assured of a restful night before operation by means of veronal or bromidia, and should not on any account be disturbed.

12. Dr. Joseph Blomfield [21] recommends glucose ʒi., aspirin grs. xx., bromide of potassium ʒi., in half a pint of water per rectum as soon as the patient returns to bed, and I have found this very valuable. I have used small doses of pituitrin (0·25 c.cm.)—one dose before leaving the theatre and repeated at intervals of one hour—with what appeared to be considerable success.

In conclusion, I wish to acknowledge the valuable assistance in the examination of blood and gastric contents I have had from Dr. Alexander Lyall.

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A CASE OF TUBERCULOUS POLYSEROSITIS WITH PREDOMINANT PERICARDIAL INVOLVEMENT.

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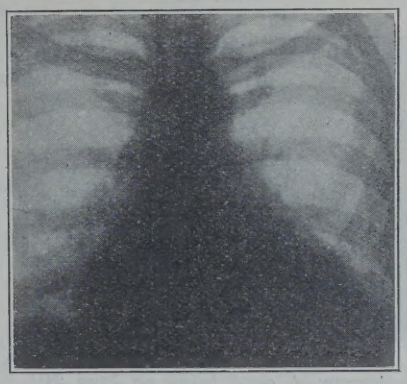
UNDER the generic term "polyserositis" is included a well-defined group of cases with chronic inflammatory thickening of the membranes lining the great serous sacs; often there are recurrent effusions, and the chief symptoms may be those of congestive heart failure. Many of the cases are regarded as "probably tuberculous," but clear proof of their exact nature may be difficult to produce. The following case is an example of polyserositis in a relatively early phase and running a more acute course than usual. It is reported because the tuberculous nature of the infection was established by culture, and the primary focus was discovered post mortem.

A previously healthy woman of 49, admitted for substernal pain, breathlessness, and continuous fever, was found to have a large pericardial effusion from which tubercle bacilli were grown in culture; there followed in succession left and right pleural effusions, ascites, and œdema of the legs. Enlarged supraclavicular glands were present from the outset, the liver became enlarged later, and the spleen was just palpable. An infection of the left quadriceps bursa developed, and from this also tubercle bacilli were grown. The general condition remained remarkably good for many months in spite of continual fever, but it gradually deteriorated, and the patient died two years after the onset from slow congestive heart failure and œdema.

FIG. 1.



Radiogram of chest taken on June 7th (patient standing). Transverse enlargement of cardiac shadow; no indication of pericardial effusion.

The post-mortem findings were:—

1. Long-standing caseating tuberculosis in one Fallopian tube (symptomless during life).

2. Tuberculous infiltration of the spleen with fibrosis, but little caseation, and infiltration of the same type in the cervical glands.

3. Chronic serositis of the pericardial, pleural, and peritoneal sacs.

The early clinical aspect of this case was that of primary pericarditis with massive effusion, and resembled the group of cases published recently by J. A. Clarke, jun., as "clinically primary tuberculous pericarditis"[1]—i.e., cases in which active tuberculous lesions cannot be demonstrated elsewhere. This writer gives an analysis of 11 proved cases already published, and reports two others; he notes the long duration up to 22 months, the insidious onset, the continued fever, and the supervening cardiac failure and œdema with absence of signs of tuberculous disease elsewhere. The diagnosis was established in many of the cases by guinea-pig inoculation of the pericardial fluid, and in only one case were tubercle bacilli demonstrated in films from this source. Miliary tuberculosis was present in six out of nine necropsies, and active pulmonary disease was found only once; caseous mediastinal glands were found three times. The original focus of disease does not appear to have been established in the other cases.

Clinical History.

The patient, aged 49, at the onset of her illness had been in good health until May, 1926. She had been subject to "bilious attacks," and had been treated for minor chronic mastitis for a year or two. There was no history of respiratory trouble, and no personal or family history of tuberculosis. The illness began with a sense of oppression and pain under the lower end of the sternum, with breathlessness and fever. She was admitted to the Elizabeth Garrett Anderson Hospital on June 3rd, 1926, about four weeks after the onset. The symptoms then were substernal pain, pain and tenderness in the epigastrium, and cough of a few days' duration. The temperature was swinging between 100° and 102° F.

The præcordial dullness was slightly increased, but could not be defined on the left, where it merged into an area of dullness in the axilla; the heart beat and sounds were somewhat obscured, though normal in character. There were no signs of apical disease of the lungs, but there was dullness with weak breath sounds at the base of the left lung in the axilla. The abdomen was not distended, and

[1] Clarke, J. A., jun.: Amer. Jour. Med. Sci., 1929, clxxvii., 115.

there was no effusion; there was a tender epigastric swelling, but the liver was not apparently enlarged. There were several moderately enlarged and tender glands above the left clavicle; they were soft and not adherent. X ray examination showed increase in the cardiac shadow transversely, but was not diagnostic of pericardial effusion (Fig. 1).

Two weeks later the diagnosis was still in doubt. There was increasing epigastric pain, and rigidity and swelling with persistent fever. The leucocytes were 10,000 to 16,000 per c.mm., with a normal differential count; the Wassermann reaction was negative; the urine was normal; there was some diarrhœa, but the stools were not abnormal; the urinary diastase index was found to be raised to 100 in a 24-hour collection. A diagnosis of pancreatitis was considered and, as the patient was acutely ill, laparotomy was performed on June 14th.

FIG. 2.

Radiogram of chest taken on June 24th (patient sitting). Typical globular shadow of pericardial effusion.

There was no general or localised peritonitis; the pancreas and stomach appeared normal, and the liver was moderately enlarged. The distended pericardial sac was bulging down through the diaphragm, and had displaced the left lobe of the liver downwards and forwards, simulating a tumour in the epigastrium. The appendix was removed, but no disease was detected in the neighbourhood.

On June 24th the pericardial effusion had increased, and the X ray plate now showed a typical globular shadow (Fig. 2). The pericardium was tapped, but only 25 c.cm. of fluid were withdrawn, owing to difficulty in aspiration; the fluid was straw-coloured, and contained a few polymorphonuclear leucocytes and red cells; no organisms were seen. Tubercle bacilli were grown subsequently from the fluid by Dr. Lepper, who thus provided the definite diagnosis.

From July to December, 1926, the patient had open-air treatment with complete rest. There were attacks of breathlessness and one slight hæmoptysis; pleural effusions developed, but did not require tapping, and the abdomen became distended but without ascites. From January to July, 1927, the patient was in Brompton Hospital under Dr. Burrell. The serous effusions became larger, and were repeatedly tapped, and oxygen replacements were given in pleuræ and abdomen. Abdominal discomfort appeared to be relieved a few days after the introduction of oxygen into the peritoneum, and at the same time the temperature fell towards normal and the effusion reappeared more slowly than before.

In July, 1927, the patient was again transferred to the E.G.A. Hospital. The liver at this time was enlarged to the umbilicus, though the spleen was not palpable and there was still much pericardial effusion with attacks of breathlessness and præcordial oppression. Five months' open-air treatment followed, with slight improvement in the general condition at first. An infection of the left subquadriceps bursa developed during this period, however, and the tubercle bacillus was grown from this.

In March, 1928, the patient was definitely deteriorating. In April she was transferred to the Royal Free Hospital. Ultra-violet light treatments appeared to improve the condition for two weeks, when relapse occurred and treatment was stopped. On two occasions during these last months the pericardium was tapped in the axilla; 260 c.cm. of blood-stained fluid were removed, the first time with relief of symptoms, and the second time 600 c.cm. were removed but without relief. The pleuræ were tapped almost weekly, and amounts from 600 to 1000 c.cm. were removed. General œdema increased, and death occurred on June 2nd, 1928, after 25 months' illness.

Fever was continuous for the whole period; the temperature was never normal for more than two or three days at a time until about ten weeks before death, when the reaction failed. The symptoms and fever were rather more acute in the first six to nine months than during the middle period of the illness; the appetite and general nutrition were well maintained, and the general resistance of the patient seemed so remarkably good that until the last six months recovery seemed possible.

Summary of Pathological Examinations during Life.

Pericardial Effusion.—The tubercle bacillus was obtained in culture when examined in June, 1926, and in January, 1927, it was demonstrated in films.

Pus from Bursa.—Tubercle bacillus grown in culture.

Pleural fluids, peritoneal fluids, and *sputum* were examined on several occasions, but the tubercle bacillus was not found.

Post-mortem Report.

Pericardium and Heart (Fig. 3).—The pericardial cavity is enormously dilated, and contains about a pint of clear fluid with flakes of fibrin. The visceral pericardium is generally thickened and fibrotic, and the parietal layer is a quarter of a centimetre thick. There are masses of fibrin adherent to the visceral pericardium over the left ventricle and in the posterior part of the sac. Microscopically there is extreme fibrosis of the parietal pericardium with a few foci of lymphocytes and plasma cells; in one or two areas giant-cell systems are present.

Pleural Cavities and Lungs.—Both cavities contain from one and a half to two pints of straw-coloured fluid. There is no thickening of the pleura except some light adhesions over the apex of the left upper lobe, which is partially collapsed; the lower lobe is completely collapsed. The

FIG. 3.

Pericardium and heart.

right lung is congested but contains air. At each apex there is a single, very small, puckered scar. There is no active tuberculous disease.

Peritoneal Cavity.—There are dense adhesions in the upper part binding the organs together; in the lower part there is a little clear fluid with few adhesions. The peritoneum is slightly thickened.

The liver is much enlarged; there are dense adhesions over the surface, and it is bound to the neighbouring structures. The capsule is thickened. The cut section is firm and the lobular pattern clear; the centres of the lobules are congested, and the outer portion pale. Microscopically there is a slight irregular increase in fibrous tissue, chiefly periportal. In the centres of the lobules are widely dilated capillaries, and the peripheral cells contain fat vacuoles. There is no evidence of tuberculosis.

The spleen (Fig. 4) is very slightly enlarged, 11 cm. in length, rounded and firm with a thickened capsule. The cut surface is smooth, and shows the congested pulp with whitish, somewhat transparent-looking areas diffusely scattered throughout the organ. The smaller areas are fairly discrete, but the larger ones tend to become confluent and have no sharply defined margin. Only a few of these

larger areas (1 cm. in diameter) show a yellowish opaque centre. Microscopically the pulp contains a large percentage of red corpuscles and a few lymphocytes; there is a diffuse increase of fibrous tissue, and the Malpighian bodies are very small. Throughout the whole spleen are areas which in some cases present typical giant-cell systems, and in others consist of necrotic, cellular debris and large pale-staining cells with pyknotic nuclei. Increase of fibrous tissue is considerable around these areas. No tubercle bacilli can be demonstrated in the sections.

Lymphatic Glands.—The mediastinal and supraclavicular glands are enlarged and fibrous. There is no caseation, but microscopically there are many typical giant-cell systems with considerable peripheral fibrosis.

The kidneys and suprarenals show no evidence of tuberculous infection.

The Fallopian Tubes.—The right tube is distended with caseous pus, and lies in the midst of dense inseparable pelvic adhesions. This is the only focus of caseating tuberculous inflammation in the body.

The left *subquadriceps bursa* is fibrosed.

Discussion.

The oldest tuberculous lesion discovered was the caseating focus in the Fallopian tube; the lungs were free from infection. In spite of the long history (two years), and the slow but widespread lymphatic spread of the bacilli from this focus to the serous sacs, the spleen, and the mediastinal and cervical lymph glands no other lesion was found which showed naked-eye caseation, although bacilli were actually grown from the fluid of the pericardial sac and quadriceps bursa many months before death. The absence of tissue necrosis and the marked degree of productive and protective fibrosis found in the spleen, the lymph-glands, and the thickened serosa were in strong contrast with the progressive caseation usually associated with widespread tuberculosis, where the symptoms and mode of death are due to the specific infection and toxæmia. In this case the symptoms and signs of congestive cardiac failure were prominent, and the effects of the widespread infection and of toxæmia relatively slight.

It seems reasonable therefore to suppose, on the clinical, pathological, and histological evidence afforded by this case, that chronic tuberculosis of the great serous sacs progressing to the production of "polyserositis," is a condition associated with a high degree of immunity to the infection, and that in more chronic cases than ours the infective element is slowly submerged as the clinical picture becomes one of mechanical obstruction to the heart and circulation.

Clinical and Laboratory Notes.

BREAD OR TOAST FOR DIABETICS?

By R. D. Lawrence, M.D. Aberd., M.R.C.P. Lond.,
Chemical Pathologist, King's College Hospital.

The question whether bread or toast is better tolerated by diabetics does not seem to be definitely settled. Theoretically it might be expected that, weight for weight, toast would be worse, because it contains more carbohydrate than bread in the proportion of 70 per cent. to 50 per cent., water being driven off in the process of toasting and the carbohydrate concentrated. There is also no evidence that any chemical change from starch to dextrin involved in toasting makes the carbohydrate of toast more slowly absorbed or capable of producing less glucose on digestion. However, some recent observations by Payne[1] suggested that toast, in the form of rusks, was better tolerated than bread. As most diabetics prefer to have any bread allowed in the form of toast (the taste of dextrin being usually considered more appetising than starch), it has seemed worth while to decide the question by the following experiments.

The effect on the blood and urine sugar of 2 or 3 oz. of bread was observed in two people with mild diabetes, and on subsequent days the effect of the same weight of bread, off the same loaf, toasted hard. It will be noticed that such toasting reduced the weight of the bread to nearly half. Tea and a little butter was given along with the bread or toast, to make the conditions of the experiment as normal as possible. The meal was given fasting in the morning.

Remarks on the Experiments.

The blood-sugar concentration before and after the meal is shown in the Table as mg. per 100 c.cm. The degree of glycosuria corresponded closely and is not reported.

Time in hours :—	0	½	1	1½	2	3
Case 1 (aged 16). Bread 2 oz. ..	99	213	221	199	165	—
Case 1 (aged 16). Toast 1½ oz. ..	95	215	243	181	162	—
Case 2 (aged 66). Bread 3 oz. ..	143	—	259	—	191	153
Case 2 (aged 66). Toast 1⅝ oz. ..	123	195	216	—	159	103
Case 2 (aged 66). Bread 3 oz. ..	114	170	200	—	164	82
Case 2 (aged 66). Toast 1⅝ oz. ..	100	181	266	—	186	130

It will be noticed that there is no constant difference in the blood-sugar curve produced by bread and its toast equivalent. In Case 2, where four experiments were carried out, there is considerable difference in the degree of hyperglycæmia, sometimes in favour of bread and sometimes of toast. The high fasting blood-sugar in the first experiment was certainly caused by an admitted excess of diet for the previous few days, which no doubt influenced unfavourably the whole level of the curve. With this exception, the curves tend to show a more rapid absorption and higher hyperglycæmia after toast than bread. But it is felt that any differences observed are within the range of error in such experiments and may be caused by slight natural variations in rate of digestion, absorption, and conditions of the carbohydrate stores and tolerance. Again, as the blood estimations were not carried out at very close intervals, the highest point of the curve may have been obtained in one experiment and missed in another.

The conclusion may be drawn that no appreciable difference can be observed in the diabetic with amounts of bread and starch which contain equal amounts of carbohydrate.

Summary.

The hyperglycæmic effect of bread has been compared with that of an equal amount of bread thoroughly toasted and no appreciable difference has been observed in two mild cases of diabetes. One may reasonably infer that, weight for weight, toast is worse tolerated than bread because it contains more carbohydrate.

[1] Payne, W. W.: The Lancet, 1927, ii., 1336.

EFFECT OF ULTRA-VIOLET RADIATION ON THE INCIDENCE OF TAR CANCER IN MICE.

By Alice C. Kohn-Speyer, M.A. Oxf.,
working in the department of experimental pathology, Lister Institute.

In The Lancet last year (1928, ii., 1070) Dr. G. M. Findlay reported that "when mice are tarred and exposed to ultra-violet light at the same time the period necessary for the induction of cancer is shorter than when either tar or ultra-violet light alone is employed." In the hope of obtaining tar cancers rapidly for treatment it was thought expedient to use Findlay's method. The results (which for some unascertained reason differ from Findlay's) are reported below.

Methods.—All the mice were tarred twice weekly

with a gasworks tar kindly supplied by Dr. E. L. Kennaway.

(1) A batch of 20 mice were tarred twice weekly and also irradiated daily by means of a mercury-vapour lamp of the

FIG. 1.

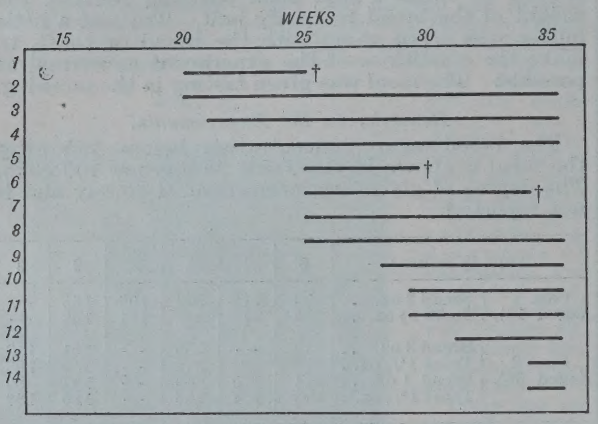
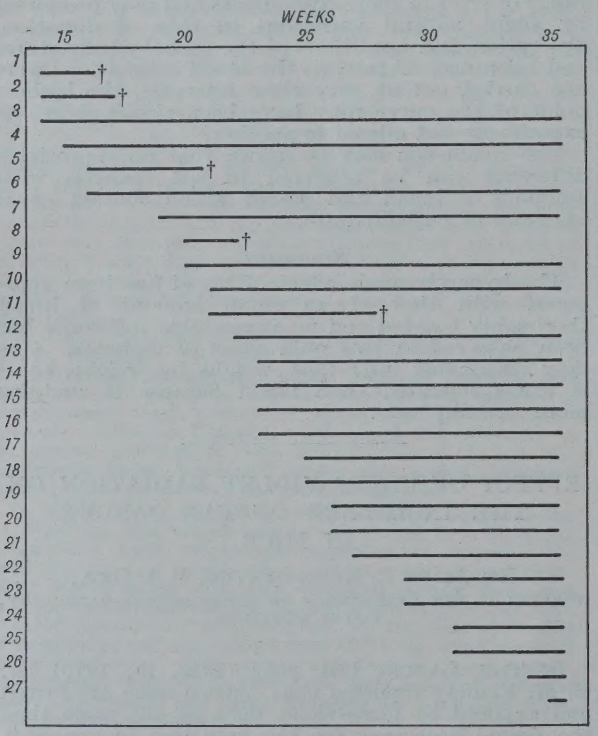


Chart showing the results of tarring mice and exposing them to ultra-violet radiation (old lamp). In this, as in Figs. 2 and 3, the black lines begin on the date at which warts appeared, and the cross indicates death.

same make as that used by Findlay (Hewittic Co.'s Ulviarc Y.2 burner, at 18 inches distance). Each irradiation lasted at first two minutes, but the time was gradually increased to five minutes, and was after eight weeks maintained at that dose. Fig. 1 shows the periods at which warts appeared in the 14 mice which survived long enough.

(2) As controls for the above a number of mice were tarred in the ordinary way without exposure to ultra-violet

FIG. 2.



Control series of mice, tarred only.

radiation. Fig. 2 shows the time of wart formation in 27 of these which survived until warts appeared. These controls indicate that the tars used by Findlay and by myself were about equally potent.

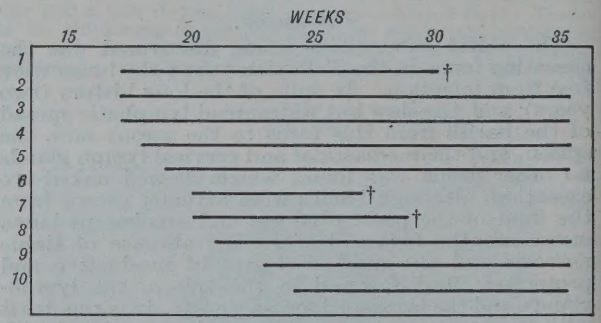
(3) Since there was no acceleration of wart formation in the tarred and irradiated animals, a second series of mice were similarly tarred and irradiated, but with a different (new) lamp of the same make. Fig. 3 shows the result of this experiment.

(4) A further series of 28 mice were given similar doses of ultra-violet light only (without tarring); 10 of these were radiated for eight months and 18 for six months; no warts have appeared in the 15 survivors up to now—i.e., a month after the radiations were stopped.

(5) Eight rats were tarred and irradiated as above for six months. One of these showed persistent dermatitis, but none of them developed warts.

It is evident from the figures that the ultra-violet light did not shorten the time necessary for wart production in the above experiments. While Findlay got ulceration of the skin with two to three minutes' exposure daily, in my experiments no ulceration occurred even when the exposure was increased up to

FIG. 3.



Results of tarring, together with ultra-violet radiation (new lamp).

five minutes. In the radiated mice the hair grew more rapidly over the epilated and treated area than in the controls; they were therefore re-epilated with sodium sulphide in the fourth and seventh weeks; later, since sodium sulphide alone sometimes causes ulceration, the treated area was epilated with forceps. In the third experiment epilation with forceps was employed from the start. The reason for employing a new lamp in this experiment was that the lamp used in the first instance was old and might therefore have been deficient in short ultra-violet rays. It will be seen that, although warts appeared slightly more quickly in the mice on Fig. 3 than in those on Fig. 1, in neither was the wart formation more rapid than in the controls (Fig. 2) which were tarred but received no ultra-violet radiation.

It is difficult to decide why these results differ so markedly from Dr. Findlay's. It seems possible that his epilations and radiations may have produced more skin injury than mine, and that the acceleration noted by him was due either to this or to some other as yet undetermined cause. It does not appear to have been due to ultra-violet radiation alone.

Conclusion.—Under the conditions of the experiment irradiating mice with ultra-violet light as an adjunct to tarring was not found to produce warts more quickly than tarring alone.

I wish to thank Dr. Thomas Lumsden for help and criticism, and the British Empire Cancer Campaign for a grant.

NORTH STAFFORDSHIRE HOSPITALS.—The Bishop of Lichfield recently dedicated seven endowed beds in the Henry J. Johnson Ward of the North Staffordshire Royal Infirmary. The trustees of the will of the late Miss Dora Twyford have just allocated to the Infirmary a sum of £50,000, in addition to £13,000 already assigned to it from the same source.—The Orthopædic Hospital of the North Staffordshire Cripples Aid Society is to be enlarged at a cost of £18,000 to £20,000. The new buildings, which will comprise a new out-patients' department, an operating theatre, an X ray department, and additional accommodation for the staff, are said to be regarded by the Ministry of Health as "a model for orthopædic hospitals." A canteen will be provided for the use of out-patients and those accompanying them. Eighty per cent. of the patients in and out, are cured. In-patients cost £2 9s. per week.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society on Dec. 9th with Mr. DONALD ARMOUR, the President, in the chair, a discussion on

HEAD INJURIES

was opened by Mr. WILFRED TROTTER. This branch of surgery, he said, was encrusted with tradition embodying doctrines of which some were still useful and living while many had outlived their vitality but were unable to die. If it was possible for abdominal surgery already to be encumbered by superseded ideas, it was natural to find that the old and slowly developed surgery of head injuries showed the same tendency in a much more marked degree. In fact it might be said that one of the chief needs of this branch to-day was a resolute overhauling of its inheritance of ideas.

Knowledge of head injuries had developed in three stages which were distinct enough to be usefully recognised. The first was a period of slow progress extending up to but not far into the last third of the nineteenth century. This might be called the early period; it passed into the middle period, which comprised a space of some 30 years or so from the 'seventies of the last century and was chiefly characterised by the entry of the experimental physiologist into the subject. Finally, the last 20 or 30 years might be regarded as a third period whose essential feature had been the harmonising of experimental and clinical knowledge and a resulting tendency to simplification.

The characteristic of the *early period* was that the subject was completely dominated by fractures of the skull. Fracture came to be looked upon as the essential event in head injury—cerebral manifestations being mere complications—and this conception persisted long after it had ceased to be useful and had become misleading. It survived to-day, though no doubt in diminishing strength, among medical men, and in the lay and especially the legal mind it persisted with indestructible vitality. In fact, the presence of a fracture made it probable, though not certain, that considerable distortion of the skull had occurred, and therefore gave a rough measure of the violence to which the brain had been exposed. But the absence of a fracture was no evidence that the skull had not been considerably distorted and the brain seriously damaged. The term "concussion of the brain" perpetuated the view that the familiar instantaneous traumatic paralysis it described was due to the brain having been shaken about inside the skull and having sustained some mysterious though happily transient detriment thereby. The evidence now available showed that the doctrine conveyed by this word was not correct, and that the state in question was due to the momentary and general anæmia of the brain which accompanied a general distortion of the skull.

In the *second period* the help of the experimental physiologist had transformed the surgery of head injuries from a largely empirical art into something approaching an applied science. They showed that circulatory disturbance was the chief mechanism by which cerebral symptoms were produced, and taught what symptoms were produced and how they were produced by a progressive lesion compressing the brain. Yet it must be admitted that their work had not resulted in as much progress on the clinical side as it had seemed to promise. The exposition of the new doctrines was apt to seem to the clinician abstruse and remote from practical reality; and the subject was so much dominated by the theory of the localised compressing lesion that the surgery of head injuries had inherited from this middle period a fallacious clinical impression that head injuries were largely a matter for urgent operations which could and should be undertaken in a considerable proportion of cases with reasonable expectations of success. Expositions of theory which had come down from the experimental school contained the principles necessary to a practical grasp of traumatic cerebral lesions; yet they did not always reduce the confused and multitudinous events of clinical experience into order and significance.

The Typical Traumatic Lesion.

In the *modern period* surgeons had been chiefly concerned with contusion, the typical traumatic lesion of the brain. Recognition of the importance of distortion of the skull had made it clear that besides direct and polar (or contrecoup) bruising to which the brain was liable under violence, the whole organ was subject to stresses and deformations which must expose its whole surface and substance to damage. Probably widespread bruising was always present after any injury at all severe, and though not in itself seriously destructive, it gained very rapidly in gravity according to the extent to which the parts of the brain in the posterior fossa of the skull were involved. Contusion here was perhaps the commonest cause of death and the commonest cause of ultimate failure in apparently successful operations for hæmorrhage. In every case of severe injury all the clinical manifestations were sketched on a background of contusion phenomena of all grades of definition. While contusion was so largely responsible for the gravity of head injuries it had in comparison with gross hæmorrhage one very favourable character—viz., that it could scarcely give rise to pressures beyond the order of the venous pressure. It could not therefore produce gross capillary anæmia and the accompanying paralytic states. Thus it rarely called for urgent operations and in so far as it was amenable to treatment at all could, and should, always be dealt with by milder measures—at any rate in the early phases. The remedies arranged roughly in the order of increasing severity of symptoms to which they were applicable were: rest, posture, hypertonic derivation (oral, rectal, or intravenous), lumbar puncture, and decompressive operation. None should be neglected and each was capable of giving brilliant results.

During the late war a large group of clinical phenomena, previously assigned to the uninviting chaos of "traumatic neurasthenia," had been found to be due to definite organic brain injury in the nature of minor and unresolved contusions of the brain substance. As soon as their true pathology was known, their symptoms were found to be well defined, the three characteristic elements being headache, giddiness, and minor mental changes. This clinical picture was a very common result of head injury of any grade. The unresolved contusion showed itself as an indefinitely persisting but variable elevation of the intracranial pressure, and its symptoms had that close dependence upon the state of the venous pressure which experimental studies had proved must be present in such circumstances.

The Clinical Picture.

Dr. C. P. SYMONDS said that Mr. Trotter had done more than anyone else to illuminate this subject. The picture which Mr. Trotter had drawn of cerebral contusion had enabled others to recognise what was a very clean-cut clinical syndrome. The lawyer was always looking for objective evidence, and what he liked to be able to show was a radiogram of a fracture of the skull. It was necessary to teach the lawyers not only that severe cerebral injury could occur without fracture of the skull, but that the symptoms of such cerebral injury were quite well defined. The symptoms of cerebral contusion were easily recognisable by those who took a careful history; for a long time they had gone by the ill-used name of "traumatic neurasthenia"—a name which usually concealed all that it was intended to cover. The difficulty of diagnosis rested largely on the absence of

physical signs in these patients, so the symptoms had to be critically analysed. They usually presented themselves under three headings—headache, giddiness, and symptoms of minor mental disorder. The mental symptoms were often difficult to evaluate because of the complicating factor of the "compensation neurosis" which was often added to the organic cerebral symptoms. Headache and giddiness were, therefore, symptoms of great importance. A point about the headache of cerebral contusion which he found it difficult to understand was the latent interval which was common between the accident and the onset of disabling headache; this interval might be of days' or even weeks' duration, and it was something not likely to be invented by a malingerer. The patient described it in terms of pain rather than discomfort. A man with neurosis might complain of agonising headache, but he would say it was a numbness or pressure rather than a splitting or throbbing pain; and it was more continuous. The headache of contusion, on the other hand, was intermittent, or if it was continuous it showed remarkable exacerbations, likely to be associated with increase of intracranial pressure—e.g., in stooping or straining at stool. The giddiness of which contusion cases complained was a transient affair—a momentary sense of loss of equilibrium—which bore a definite relation to posture; thus it might come on when resuming the erect posture after lacing the boots; or after quickly turning his head to see if the way was clear the patient might become incapable of crossing the street. These symptoms together formed a very characteristic picture of a bruised brain. The value of the mental symptoms was harder to assess, though critical analysis of them would often allow distinction from those of a neurosis. The neurotic patient might complain of inability to concentrate, and of excessive mental fatigue, though he might still manifest surprising agility in debate. In true cerebral disease there was a slowing of thought, a defective memory, a true mental fatigue.

The long interval between the injury and the development of symptoms was no doubt often due to the fact that so long as the patient rested he was free from symptoms, but this was not always so. Histological research, especially in the laboratories of Otaka and Penfield, had shown that minor injury to the brain might result in very slow changes in the neuroglia—changes which in themselves led to vascular displacement and possibly to vascular congestion.

Radiography of the Skull.

Mr. H. K. GRAHAM HODGSON demonstrated a series of films illustrating the radiographic appearance of the skull after fracture. In radiographing the skull, one threw complicated shadows on the plate, and unless standard views were used, in which the skull bore a definite angle relationship to the film, the picture was hard to interpret. Such measurements as the nose-chin, or nose-chin-forehead, were fallacious, owing to the varying sizes of noses, and of projection of chin and forehead. Therefore in cranial radiography it was essential to take a definite line, such as the outer canthus of the eye to the external auditory meatus, and make it bear a definite angle to the film. Further, if only one or two anteroposterior radiograms and a lateral one were taken, many fractures of the skull would be missed; so it was necessary to search by means of 7 or 8 standard views. At the suggestion of Messrs. Kodak, he had tried superimposing two films, and this showed the nasal bones, cartilages, and soft parts outlined, and also the alteration in the contour of the nose. Another important view of the nasal bones was taken with the film underneath the nose, looking straight down through the vertex of the skull.

Dr. GEORGE VILVANDRÉ said that at the London Hospital it was the routine practice to take stereoscopic views of skulls about which any question arose. He thought that the lateral view and the anteroposterior view were of only limited value, and that no really useful knowledge could be gained with X rays unless stereoscopic views were taken. Looking at a picture of a cranial fracture was liable to lead to excessive concentration on actual bony damage and to comparative neglect of the injury to the brain. Thus the heads of two schoolboys collided in a game of football, and one of them got a depressed fracture of the frontal bone. From the appearance of the fractured bone it was judged that an operation would be necessary, but nothing operative was done and the boy made a good recovery. Sometimes a radiogram might give a misleading impression and sometimes the patient was so ill that radiography was for the moment out of the question.

Contusion Headaches.

Dr. GEORGE RIDDOCH said that like Dr. Symonds he was puzzled by the nature of headaches coming on after cerebral contusion. As had been pointed out the brain might be injured without a fracture and consciousness might be lost as a result of concussion. But contusion headaches might follow head injury where consciousness had never been lost. This class of case presented great difficulty, especially in the absence of physical signs, even in the presence of severe contusion headaches. Though Penfield's investigations might do something to elucidate the origin of headaches developing after a long latent period the question was not yet answered fully. There were changes in the brain, but Dr. Riddoch thought there might also be external changes in the meninges, comparable to the chronic arachnoiditis or meningitis serosa circumscripta sometimes found after spinal injuries. He urged the importance of keeping head injury cases in bed longer than was customary. Though this was difficult in a general hospital an attempt should be made to improve on the usual few days' rest before the patient was shunted off to an infirmary. This in itself he thought, would eliminate some of the milder cases. In the attempt to reduce intracranial pressure he had found it very beneficial to keep the patient propped up in bed and give hypertonic saline per rectum and magnesium sulphate twice a day. The patient should be asked to retain the rectal injection for a quarter of an hour. For severe cases he had recently tried replacing some cerebro-spinal fluid with air; in a proportion this had allayed the headache, perhaps by altering the condition of the arachnoid in the region of the superficial contusion and by re-establishing the cerebro-spinal fluid circulation. The decompression operations successfully practised in the late war had not proved so successful he thought, for the more general injuries of civil life. Their failure was especially marked if the patient was demoralised and neurasthenic before operation. In such people the last condition was often worse than the first.

Sir JAMES DUNDAS-GRANT recalled to the meeting a statement by Erichsen in connexion with "railway spine"—namely, that in contusion and concussion of the spine, after the more acute symptoms had passed off, great relief was afforded by small doses of perchloride of mercury. The speaker had seen many cases with definite vertigo without apparent injury to the internal ear in which this drug gave gratifying results. The reason was clearer now it had been found that slow and more or less inflammatory degenerations took place in the neuroglia.

Mr. TROTTER, in a brief reply, confessed he was unable to answer the one question which Dr. Symonds had put to him. It concerned one of the most mysterious problems in cerebral pathology; that a patient might enjoy apparently normal health for a definite period, and then develop disabling symptoms from an injury which must be considered to have been present all the time. He had been particularly interested to hear of the cases of depressed fracture which had recovered without operation. He had long felt that the ancient doctrine that (except in the very young) any fracture must be operated upon, was wrong. The reason for the view had been the risk of epilepsy. He now believed that the risk of epilepsy

from a simple depressed fracture was no greater than the risk of epilepsy from an operation involving incision of the dura mater.

HUNTERIAN SOCIETY.

AT a meeting of this Society on Dec. 16th Dr. ERNEST YOUNG, the President, took the chair, and a discussion on

WHITLOW AND ITS COMPLICATIONS

was opened by Mr. ZACHARY COPE. He deplored, he said, the tendency in the medical profession to instruct students minutely in the diagnosis and treatment of such rare conditions as pituitary tumour, while omitting any detailed information on common and important affections such as whitlow. The average student was woefully ignorant on this subject and the text-books allowed it the most casual and scanty description. In a recently published American text-book, "Nelson's Loose-Leaf Living Surgery," there were 100 pages devoted to this condition, while an important English text-book allowed it only 15½ lines.

The word "whitlow" was derived from the word "whitflaw," meaning a "rent" or "tear," and not (as he had been at first inclined to suppose) "from white flow," or flow of pus. And, in fact, the infection nearly always did enter through an abrasion, though occasionally it might be blood-borne; further, it was specially liable to occur when the patient was run down. The simplest form of whitlow was the subcuticular variety. This type, which was annoying but not dangerous, was caused by an invasion of the subcuticular tissue by the organism, usually either a streptococcus or a staphylococcus. The streptococcus was the commoner causative organism in these cases, and the more troublesome, often giving rise to the condition of paronychia or perionychia. The successful treatment depended entirely on thorough drainage; the overlying cuticle must be removed and if the infection had extended under the nail this must also be cut away as far as was necessary. It was useless to leave even a small area of infection covered by nail, as the finger would not heal unless the whole septic area had adequate drainage. In the second, or subcutaneous, form of whitlow the condition was much more serious because the infection was in a prison, bounded posteriorly by the bone and anteriorly by the dense skin, while at the base of the phalanx it was on dangerous ground owing to the propinquity of the tendon sheath. This form of whitlow was rightly described as a "felon," and Mr. Cope proposed to show what routes the felon, or rather the microbe, might follow in making its escape.

In the first place it might make use of the blood stream. This he likened to invasion of territory by means of aeroplanes; it could not be stopped and was usually fatal. Secondly, the infection might follow the lymphatics. This corresponded to a state of affairs in which the invading army had captured the railways. It was slower than a blood stream infection, and the lymphatic nodes represented stations, or points at which the invasion could be held up. The third method was invasion by cellular contiguity; the army was entering by the country roads, often rough ones. This method was slow unless the army struck an arterial road, which was represented by the tendon sheath.

Treatment.

The first principle to be followed in the treatment of whitlows was anatomical diagnosis. It should always be remembered that tension was the cause of pain, and that tenderness on pressure gave the site of tension. In the palmar space, he added, the pain might not be marked because the space was larger and therefore the tension less than elsewhere. In diagnosing the site of the pus, swelling, tenderness, position, and movement of fingers should all be taken into consideration. It was a bad policy, though followed by most general practitioners, to incise over the maximum swelling. An anatomical diagnosis should be made first, and the best incision employed for the condition found. Infection of the tendon sheath of the ring finger led to bulging in the palm, of those of the middle and index fingers to bulging of the thenar eminence. The pain in a distended palm becomes less as the tissues become sodden and the nerves poisoned by the toxins of the pus.

Preventive measures were important. These should consist of early treatment of abrasions with iodine, all horny skin being first shaved away from the region of the cut. A dressing should always be used, and a strapping dressing was essential if it was to keep in place. In the United States the percentage of whitlows in factories had been enormously reduced by these simple measures. When incision was necessary it was important for the surgeon to see what he was doing, and to give himself plenty of time to see. For this reason the incision should always be made under a general anæsthetic or gas, not under a local anæsthetic such as ethyl chloride. A tourniquet was extremely valuable as it gave one a dry field and enabled one to see the pus. Drainage tubes should never be put into the palm; a gauze wick or a piece of rubber tissue was enough. Finally, the drainage must at all costs be adequate. In making incisions it must be remembered that finger incisions should be at the side, not in the mid-line. A circular flap was sometimes used but the speaker did not think this was necessary. If the palmar space was infected the incision should run the whole length of the hypothenar eminence, and a slight incision should always be made above the wrist on the ulnar side. An incision over the thenar eminence should always stop half an inch above the wrist to avoid damage to the deep palmar arch or its branches. After-treatment should consist of moist or dry dressings and baths. Active movements should be begun as soon as the inflammation had subsided. Radiant heat and ultra-violet light were valuable, and passive hyperæmia could be used, but only after incision.

Septic hands, Mr. Cope concluded, caused more loss of working time than acute appendicitis, and to anyone of discrimination appendicitis was preferable.

A Branch of Major Surgery.

Mr. HERBERT CARSON said that the surgery of the hand was major surgery which had been too long masquerading as minor. It was relegated to junior members of hospital staffs who had had no adequate preparation. In reality the subject was simple once the anatomy of the part was thoroughly mastered, and if the case was seen early. As a rule, patients came late with the whole hand swollen, which greatly increased the difficulties of diagnosis. As far as prophylaxis went all factories should be supplied with a casualty room and a competent nurse. Unfortunately, many cases occurred in sempstresses and scrubbers, who did not work in factories.

The four types of whitlow were: pulp infections with or without paronychia, tenosynovitis, invasion of the fascial planes, and lymphangitis, in which the general condition was serious and the local signs comparatively slight. The danger in pulp involvement was necrosis of the terminal phalanx owing to interference with the blood-supply by the swelling. In tenosynovitis sloughing of the tendon was to be feared, and the same result might occur in the third type. In the case of lymphangitis there was danger of death without local loss. In the case of the two earlier conditions treatment should be by immediate and adequate incision. In the case of abscess between the fascial planes there was time for thorough examination and exact diagnosis. When lymphangitis was present no operation must be performed until absolutely necessary, for premature operation might do more harm than good. Mr. Carson advised all surgeons interested in this subject to read Kanavel's book, which, though arranged in a confusing manner,

was extremely valuable and complete. It should be recognised that incision of a whitlow was a major operation. It should never be performed under a local anæsthetic or under gas. After-treatment should include splinting, and rest in bed for at least 24, and preferably 48, hours. Morphia should be given, and fluid in large quantities. With regard to incisions he disagreed with Mr. Cope that a semi-circular incision on the phalanx was unnecessary; he had found that it gave very good results. Fomentations were definitely unwise; moist or dry dressings should be used, and massage should be performed daily in a bath by the gloved hand of the surgeon. Radiant heat was helpful. He wished to emphasise the fact that if the anatomy was thoroughly mastered these cases presented no difficulties.

Discussion.

Mr. W. H. OGILVIE said that he agreed that fluids were valuable in the treatment, and he personally believed in hypertonic dressings. He had used glycerin and glycerin and thymol with good results.

Mr. A. E. MORTIMER WOOLF said that the chief reason for bad results in these cases was delay before the patient saw the surgeon; he deprecated strongly the custom of treating whitlows in the casualty department of hospitals. Insufficient surgical precautions were taken, with danger of "mixing the breeds" of infection. He considered that most whitlows were due to a mixed infection of staphylococcus and streptococcus. In one case of his where healing had been greatly delayed the diphtheria bacillus was found, and the finger healed after one injection of antidiphtheritic serum. In cases of chronicity he advised examination for other organisms than the pyogenic cocci. He was of the opinion that in the acute stage the lesion could often be localised by application of ultra-violet light; on the other hand, when the acute stage was past, this treatment might cause the sepsis to flare up. With regard to incisions, he also made use of the semi-circular flap on the phalanx. Where there was pus in the forearm on the interosseous membrane, most text-books advised division of the annular ligament, but this he thought unnecessary and crippling. A drain of rubber tissue could be passed under the ligament. On opening tendon sheaths, with consequent destruction of their blood-supply in the vinculæ, he had always found that sloughing occurred. He agreed that cases of lymphangitis should not be opened too early, but said that to decide the exact moment for action was an anxious matter. Practitioners should not open whitlows unless they were capable of opening them competently.

Mr. H. E. GRIFFITHS emphasised the value of the tourniquet during operation, and objected strongly to the fomentation as a dressing. In his opinion dressings should be dry, and the patient should be encouraged to exercise the affected part early.—Mr. D. C. NORRIS described the conditions in a certain factory where the employees reported on an average every ten days, complaining of septic fingers. The cause was found in the old and dirty rags which were supplied to the men to rub their hands, and in the slight abrasions caused by small fragments of steel from the machinery.—Dr. D. A. COLES advised early treatment of abrasions with ultra-violet light as a preventive measure. He had had a case of whitlow in Hedjaz some years before which the patient had wrapped round with parchment inscribed with a verse from the Koran, from which he refused to be parted. Mr. Coles had agreed heartily, boiled the parchment, and used it as a drain in the incised finger. The results had been excellent.

Mr. TUDOR EDWARDS raised the question of anæsthesia. He would be afraid, he said, to use chloroform, and pure ether alone was not suitable for an adult. He suggested gas, oxygen, and ether anæsthesia as being the most suitable.—Dr. HOWARD HUMPHRIS said that ultra-violet light limited the infection, especially if the septic area was well exposed. Results of this treatment were excellent, and must be seen to be believed.

After further discussion Mr. COPE replied. He believed that organisms other than the staphylococcus and streptococcus were extremely rare. The curved incision was of value only if the patient was not a musician, for it might leave a painful scar.

Mr. CARSON said he had no prejudice against properly administered gas and oxygen, or gas, oxygen and ether as an anæsthetic. What he wished to protect the patient against was the "whiff of gas" of casualty departments.

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS.

THE sixth meeting of this Society was held in Oxford on Nov. 22nd and 23rd, under the Presidency of Sir PERCY SARGENT. The first day was occupied with papers, commencing with a discussion on Jacksonian epilepsy, the historical background of which was sketched in by Mr. Geoffrey Jefferson.

The PRESIDENT described two cases of compression of the spinal cord by unusual agents, in the first by a mass of septic granulation tissue. Although the infected material was intradural and *Staphylococcus aureus* was cultured from it the patient made a good recovery. She had previously had a severe septic infection of the arm. The second case was a large non-syphilitic aneurysm of the anterior spinal artery in a young woman, the subject of congenital aortic stenosis.—Mr. HUGH CAIRNS showed three patients he had operated upon: a woman with a large frontal cyst with a superficial mural nodule that had been easily removed (radon was subsequently inserted); a woman from whom a tumour of the vermis had been removed by electro-surgery at a second session some months after a suboccipital decompression had relieved her troubles; and a boy whose vermis was split at operation but did not reveal a tumour.—Mr. NORMAN DOTT showed the lantern-slides of an arterial angioma of the right hemisphere outlined by sodium iodide injected into the internal carotid artery under local anæsthesia. Good pictures were obtained and the internal carotid artery was tied. Deep X ray therapy was being continued in this case.—Mr. JEFFERSON showed ventriculograms of a case in which establishment of the fact that the third ventricle was dilated led to the exposure and removal of the tumour.

In the afternoon Sir FARQUHAR BUZZARD, with Dr. GIBSON and Dr. COLLIER, showed a series of cases in which the diagnosis and management of cerebral cases were discussed. The first was a young man with severe occasional headache, with no choking of the optic discs. He complained of flashes of light in the left visual field, whilst the only positive finding was absence of the left abdominal reflexes. Sir Farquhar was inclined to consider tumour the most probable explanation and to place the growth in the right temporal area. The question of ventriculography was discussed in relation to this case. A case of paraplegia, occurring in a young woman with a history dating from an injury to the back, was next reviewed. The most probable diagnosis seemed to be meningitis serosa, and the cerebro-spinal fluid changes in this disease were then debated.—Dr. A. G. GIBSON showed a case in which Jacksonian seizures were occurring in the right side of the mouth and in the right hand. The fact that there was no papillœdema was regarded as no evidence that a large tumour might not be present, but the patient refused operation. The help to be obtained from X rays, and the possibility of treating the case by deep X ray therapy were gone into.—The next case was that of a man who had suffered a parietal wound and then developed epilepsy. Sir Percy Sargent had plated the bone defect and the epilepsy ceased for some years. On its reappearance some little time ago, Mr. Bevers had put in a second plate, with again an improvement.—Sir FARQUHAR BUZZARD showed a case of

left-sided acoustic neuroma removed by Sir Percy Sargent some time ago, an unusually good result in a type of case that is often disappointing.

On Nov. 23rd the meeting was concluded by a demonstration in Sir Charles Sherrington's laboratories. A series of addresses and illustrations were given by Dr. J. F. Fulton, Dr. Liddell, Miss Cooper, Dr. Denny-Brown, Dr. Eccles, with comments from Sir Charles Sherrington.—Mr. CAIRNS and Dr. FULTON described the effects of various doses of radon on the normal spinal cord with a view to arriving at a safe dose for human beings with irremovable spinal tumours.—Mr. DOTT described the uses of electro-surgery in neurological work, and gave illustrative cases. He commented on the fact that the line of section was so clean and undamaged that it might recommend itself to experimental work as well. The various machines available and possible improvements were discussed by the members.

LIVERPOOL MEDICAL INSTITUTION.

AT a pathological meeting of this Institution on Dec. 5th, with Dr. JOHN HAY, the President, in the chair, a paper on the

COMPARATIVE ANATOMY AND PSYCHO-PATHOLOGY OF COMITANT CONVERGENT SQUINT

was read by Mr. BERNARD CHAVASSE. He said that of existing theories about the cause of squint, that of muscular paralysis, even with expert diagnosis, was applicable only in rare cases. The fusion faculty theory introduced a deus ex machîna—comforting, but hardly explanatory in the scientific sense. The hypermetropic theory of Donders was, however, important. Properly to assess its value it was necessary to know the incidence of the various degrees of hypermetropia in normal children of the age of incidence of squint, and to establish in each degree a ratio with the corresponding figure for squinters. If this was done it was seen that the incidence of squint rises in geometrical progression as the degree of hypermetropia progresses arithmetically—so unmistakably that he thought the 400 cases (200 each of squinters and normal children) on which his figures were based were sufficient. Although such figures established beyond cavil an exact mathematical relationship between definite degrees of hypermetropia and ordinary squint, the hypermetropia theory failed to account for cases in which the hypermetropia was no more than normal for the age of the patient, or of such degree as would appear to be within the physiological limits of compensatory divergence. And in any case the theory failed utterly to account for the cases of convergent squint actually myopic from onset. Moreover, the hypermetropia theory as such left unexplained the disproportion between the degree of hypermetropia and the degree of convergence. The fact was there was no proportion between them at all. Avoidance of diplopia could hardly be operative in those cases—for instance, the traumatic cases—in which the acuity of the squinting eye was, from the first, below the diplopia threshold. Further, the hypermetropia theory offered no explanation of the mechanism in virtue of which most hypermetropes escape squint, nor of possible anomalies of the same mechanism which might precipitate squint. But although the theory was of partial validity only it would occupy a place of primary importance in any complete theory.

He proceeded to outline in some detail an evolutionary approach to the problem of squint. Contrary to the widely accepted belief stereopsis was no perquisite of the primates. He described conjugate movements in the eyes of fishes, distinguishing smooth fixational conjugate movement and jerking refixational conjugate movement—the fixation in each case being panobjective (panoramic). He described monobjective binocularity in fishes and the primitive mechanism, by which, in his view, stereopsis is attained (in the absence, almost total, of convergence) by the establishment of functional retinal correspondences related to some precise activity, such as the engulfing of a prey situate at an invariable distance from the snout. In the development of species the perfecting of stereopsis was effected by convergence of the eyes, which approximated the optical axes to the stereoscopic axes, thus eliminating optical errors and enlarging the stereoscopic field. Such was the power of the convergence lure that even the bones were plastic before it, and all kinds of compensatory mechanisms and habits, some of them of the most profound character, such as the adoption of arboreal life by man's ancestors and the assumption of the erect posture, were evolved merely to enable convergence to proceed unhampered by the implied limitation of panoramic vision. Of the total ocular correspondence which was the foundation of stereopsis, retinal correspondence was perhaps the most important item, and it was of various grades. In fishes and most mammals the retinal correspondence was functional. There was a macula, but it was functional only. In tarsius and the chameleon the correspondence was centred in a structural macula, whilst in birds and primates the correspondence was pre-eminently foveal. There was nothing in the foveæ of the primates to give them the exclusive right to stereopsis. Most birds had two foveæ in each eye, one for stereopsis, the other for acute vision laterally. Foveæ and maculæ were widely distributed, although not always on the stereoscopic axis as they are in birds, primates, the chameleon, and tarsius. Many reptiles had them; and the sea-horse. Owing to the dominance of the foveæ, bifoveal correspondence, as contrasted with lower grades of retinal correspondence, was perhaps of special importance in the phylogenetic arrest of convergence. The arresting mechanism became specially centred in them, and might not function without the pair of them. In the mammalia bifoveal reactions were of recent evolution only, which might be one reason for their instability, at all events in early life, quite apart from ordinary developmental instability. The last leg on which this "primatial perquisite" theory had to stand was an old but entirely erroneous idea regarding the function of the optic chiasma. The variations (hemidecussation, &c.) had no bearing whatever either on unqualified binocular sensation or on stereopsis; but in animals whose purely monocular field was very small, opportunity was afforded by hemidecussation for effecting a heavy cut in the nervous connexions essential for the proper movement of the globes. Phylogenetic convergence was recapitulated in human embryology; but the bifoveal reactions, which were at once the goal and the limit of convergence, were attained as in other animals by a final *muscular* convergence, the physiological basis of which is an inherited mechanism of an antiquity far exceeding that of the mammalian fovea. An ancient sequence was pursued. Thus a stimulus incident monocularly and peripherally led to monocular fixation. This led to convergence. This in turn led to retinal correspondence and retinal correspondence led to the maintenance of an ocular posture. These primary links in this chain reflex were clearly defined in the chameleon, but in most animals they were reinforced and obscured by additional links—largely reflexes involving proprioception. The whole system effected a total ocular correspondence with reference to the object regarded, and, according to which of the component correspondences was at fault, there issued squint of various kinds, paralytic, comitant, &c. The correspondences were paired (as between the two sides), some sensory, some motor. There were also crossed correspondences, first between sensory and motor of similar pairs (as between one internal rectus and the other) and secondly between sensory and motor of different pairs. The crossed correspondences were reflex. The paired correspondences were anatomical. Within this system one distinguished a convergence reflex the stimulus to which is adequate even if monocular;

the ensuing convergence being arrested in equilibrium by a retinal correspondence reflex (in man pre-eminently bifoveal) the stimulus to which is necessarily binocular. The retinal correspondence, or bifoveal, reflex was a postural reflex.

On such a scheme the comitant convergent squint of ocular inequality, however arising, found a ready explanation, quite apart from its usual coincidence with degrees of hypermetropia (1·0 to 3·9) which were normal for children of the age of onset of squint. As regards myopia, there was the possibility that adequate figures might establish a relationship similar to that observed in hypermetropia. At all events if it was remembered how rare myopia is at this age, and the considerable percentage of convergent squints who are myopic from the first, the labour involved in collecting a sufficient number of these rather uncommon cases might not be in vain. Myopia would act by interfering with the bifoveal reflex at all distances beyond the far point. The cases of squint associated with hypermetropia abnormal for young children—that is, 4·0 D and over, might be regarded as initiated by a primary convergence from exhaustion of compensatory divergence. The image in one eye being thrown completely off the fovea a gross retinal non-correspondence resulted, so that the convergence reflex assumed control. The great complexity of the reflexes involved in stereopsis, and their dependence on consciousness, suggested an examination of comitant convergent squint from the standpoint of psychology. In this way might be discerned the operation of an instinct, the stereoscopic instinct, which was a specific innate tendency taking a place of significance in the hierarchy of the instincts. The stereoscopic instinct appeared to come under the definitions of instinct given by recognised authorities, and was comparable to other instincts (and very closely to the instinct to assume the erect posture) as regards age of onset, early instability (incoördination), acquired stability, decay, and liability to perversion by frustration in the period of incoördination. In such a view comitant convergent strabismus is a postural perversion which expresses the attempt of the frustrated stereoscopic instinct to attain consummation by the immemorial means of convergence. The value of such an approach to the problem of comitant convergent squint (apart from any therapeutic indications) was that it set us free once more to search for further causes of ocular non-correspondence and especially for causes of bifoveal non-correspondence, as well as for any functional or psychological factors which might frustrate the stereoscopic instinct in the early years of life.

Discussion.

The PRESIDENT referred to the mechanism of accommodation in birds and instanced the domestic fowl as showing the separateness of the lateral and binocular activities.

Mr. EDGAR STEVENSON said that he thought it was generally felt that the existing theories of squint were unsatisfactory. A new theory which proved its worth would be welcome.

Mr. E. M. STOCKDALE made a number of criticisms under the headings of amblyopia, the contrasting convergence and divergence of hypermetropia and myopia respectively, the posture of the eyes in anæsthesia, the divergence of the eyes in upward as contrasted with the convergence of the downward gaze (the lids being closed). He thought that there was probably some truth in all of the generally accepted theories.

Dr. STOTT contrasted the bland look of the diverging eyes of the dove with the threatening aspect of the carnivorous birds, such as the eagle, when employing their power of convergence. The same difference in the position of the eyes and the aspect of the animal seemed to apply also among the mammalia—the herbivores never exhibiting "the piercing look" of the carnivora.

Reviews and Notices of Books.

GASTRIC AND DUODENAL ULCER.

By A. F. HURST, M.A., M.D. Oxon., F.R.C.P., Senior Physician to Guy's Hospital; and MATTHEW J. STEWART, M.B. Glasg., F.R.C.P., Professor of Pathology, University of Leeds. With the coöperation in the Radiological Section of P. J. BRIGGS, M.A. Cantab., M.R.C.S., L.R.C.P., Radiologist to New Lodge Clinic and the Medico-Neurological Clinic at Guy's Hospital. London: Humphrey Milford, Oxford University Press. 1929. Pp. 544. £3 3*s*.

THE senior physician of Guy's Hospital and the professor of pathology in the University of Leeds have collaborated to produce an exhaustive work on a disease of great frequency and increasing importance. The volume is beautifully illustrated, and though at first sight three guineas seems a large outlay for a monograph on a single lesion affecting a small part of the intestinal tract, we would urge not only physicians but also all surgeons who operate on gastric cases to study this work and learn the lessons taught therein. It is not to be supposed for a moment that the authors approached their subject with a bias towards medical rather than surgical treatment. On the contrary, they are careful to make it clear that they have a profound belief in the utility of surgery for many cases of peptic ulcer. The authorship of each chapter is indicated. Prof. Stewart naturally deals for the most part with the pathological and Dr. Hurst with the more clinical side, but the authors have collaborated closely, and the work of each has throughout been corrected and amended by his colleague.

The first chapter calling for close attention is that by Dr. Hurst upon the pathogenesis of ulcer. The importance of direct factors such as the hydrochloric acid of the stomach, focal sepsis and gastritis, and predisposing factors such as diathesis, duodenal ileus, tobacco and faulty habits, are fully discussed, and an excellent survey of the literature is appended. It is regrettable that the author has omitted to summarise his conclusions. In the third chapter Prof. Stewart deals with the pathological anatomy of ulcer, and his review is illustrated by a large number of extremely well-produced pictures, many of which are in colour. In later chapters Dr. Briggs and Dr. Hurst discuss the X ray appearances, and again the reader will find great help from the illustrations elaborating the text. The complications of gastric and duodenal ulcer are described chiefly by Dr. Hurst, with sections on the pathology and on fistulæ by Prof. Stewart.

Treatment receives full attention, and those who have specialised in this problem will admire the clear and convincing manner with which Dr. Hurst sets out in detail the modern medical methods available and the points requiring special control and caution. His opinions concerning surgical treatment will be accepted by many surgeons. Operation is called for in gastric ulcer in: (1) The very rare cases in which a thorough investigation leaves even the slightest doubt whether a simple ulcer is becoming malignant. (2) The equally rare cases in which a chronic ulcer thought to be simple does not heal completely as a result of prolonged medical treatment. (3) Recurrence of ulceration, in spite of conscientious attention to the post-ulcer régime and after the removal of all sources of infection. (4) Hour-glass contraction. (5) Pyloric obstruction. (6) Perforation. (7) Very rarely, hæmorrhage. Duodenal ulcer requires operation in: (1) The very rare cases in which a chronic ulcer does not heal completely as a result of thorough medical treatment within eight weeks. (2) Pyloric or duodenal obstruction. (3) Association with chronic duodenal ileus and also in the circumstances outlined for gastric ulcer under headings (3), (6), and (7). Dr. Hurst regards the surgical risk with a careful, critical eye, and admits the admirable results which may be obtained when a proper sense of relativity

exists. The conclusions reached are based on great experience and careful thought. The book terminates with an index of names and a separate index of subjects, which has been compiled in a manner which is a delight to the experienced reader. The authors deserve warm congratulation on the splendid work which they have achieved.

BACTERIOLOGY.

A System of Bacteriology in Relation to Medicine. By VARIOUS AUTHORS. Medical Research Council. Vol. IV. London: H.M. Stationery Office. 1929. Pp. 482. £1 1s.

THE present volume, as might be anticipated from its sponsors and from the authors of the individual articles, is of a very high degree of excellence. It is a matter for congratulation that British bacteriologists have produced a systematic treatise on bacteriology which, to judge from the two volumes so far issued, is worthy of the high standard of bacteriology in this country. Vol. IV. deals almost entirely with the different groups of bacteria which exert their activities upon or through the alimentary tract. The first chapter is concerned with *Bacillus typhosus* and is written by Dr. D. Harvey; Mr. P. Bruce White deals with the Salmonella group; the dysentery group is mainly in the hands of Dr. A. D. Gardner and Prof. L. S. Dudgeon; the colon group and similar bacteria are described by Dr. W. J. Wilson; the cholera vibrio and related organisms by Dr. Mackie, Dr. E. D. W. Greig, and Dr. Harvey; and the pasteurellas by Dr. H. Schütze. Interesting historical introductions are supplied to the different chapters by Prof. W. Bulloch.

The outstanding feature of the articles taken as a whole is the reliability and completeness of the information supplied so far as it refers to purely bacteriological points. The authors are mostly men who have themselves done some original work on the organisms they describe and have a wide familiarity with the literature which enables them to assimilate recent work and to place it in proper perspective. We notice certain omissions, mainly on that side of bacteriology which is applied to public health. For example, scanty space is devoted to the viability of the typhoid bacillus outside the animal body in excreta, soil, fresh water, salt water, and shell-fish, all points of great practical importance. Some of these aspects are no doubt dealt with in one of the other eight volumes but no indication of this is given in cross references. By excluding all the details of practical methods of identification from this volume it was found possible to cover the ground very completely, and the high standard of excellence set in Vol. III., reviewed in THE LANCET of Sept. 28th, is maintained. The two chapters on the Salmonella and dysentery groups are particularly helpful in view of the confusion which has existed in regard to terminology and classification. Dr. Gardner admits that the classification adopted for the dysentery group is only provisional. Many unsettled bacteriological points, such for example as the true pathological significance of Morgan's (No. 1) bacillus and the various paradysentery bacilli, receive attention. The toxicity of heated cultures of Salmonella strains is accepted as established but on the interesting, but still unsettled, question as to whether such heated toxins are responsible for food poisoning outbreaks, the evidence is summarised in detail but no definite conclusion is stated.

The very difficult problem of the colon group and similar bacilli is discussed in some detail by Dr. Wilson. He is unable to clear up all the difficulties or even to put on any satisfactory basis the relationships of strains which may be accepted as members of the group, still less that of the closely allied types, but he gives a clear and readable account of our present knowledge and shows in what directions work is progressing. His chapter also includes an account of the proteus group. Its pathogenic functions are dealt with in a spirit of tolerant scepticism, with an admission that it may be of importance in the causation of the diarrhœa of infants.

The type is clear and the volume convenient to handle. There are no illustrations, which some may regret, while others may rejoice that bacteriology has passed away from its morphological leading strings.

PSYCHOLOGY.

Instinct and Intuition. A Study in Mental Duality. By GEORGE BINNEY DIBBLEE, M.A., formerly Fellow of All Souls College, Oxford. London: Faber and Faber, Ltd. 1929. Pp. 384. 25s.

IN this provocative and closely reasoned work the author aims at more than a discussion of the nature and distinguishing marks of instinct and intuition. He attempts to create a system of psychoneurology, which shall explain on the basis of a new form of duality the complete working of the body-mind system with special reference to those largely extra-conscious activities, instinct and intuition. Although much of the material is, or should be, well known to the student of neurology and psychology, Mr. Dibblee has used the philosophical and methodological value of the work, particularly of Head, Rivers, and Parsons, as these researches have never to our knowledge been utilised before. Mr. Dibblee regards his subject mainly from the neurological angle, for, he says, "the inception of my argument in spite of its apparent psychological origin and character has been from body to mind, and not from mind to body. . . . I believe that the body-to-mind argument for the existence of human instincts is stronger than that which we are entitled to draw from introspection."

His argument is based on Head's work upon the thalamus as the "end organ" for all sensory incoming stimuli, the centre, as it were, of feeling tone, from which sensibilia pass upwards to the cortex to receive their ultimate categorisation as intellectual knowledge. This centre in the thalamus, the "intercalated cell" of Head, is regarded by the author as the true centre of instinct government. Here the instincts, affect laden with ungraded sensibilia, start the life of action, but are not uninfluenced by outgoing cortico-thalamic impulses grading them with the censureship or inhibitory control of subtler cortical knowledge. The cortex, though concerned with the processes of consciousness, manifests itself in extraconscious activity as the process of intuition. Like the instincts, which are largely unconscious but are concerned entirely with the life of action, so intuition, extraconscious too but not concerned with the life of action, is related to intelligence. Intuition may be regarded as an epicritic type of spontaneous adjustment to intellectual situations, whereas the instincts are protopathic types of active adjustments to situations on the perceptual level. Mr. Dibblee sees this duality, of a thalamic life of action endorsed by the protopathic element in sensory experience, and a cortical life of what one might call contemplation, endorsed by the epicritic element in sensory experience, running through all mental functioning. He sees this duality in thought and in feeling, in memory, and in the various manifestations of the conscious and unconscious self. Such an all-pervading scheme of neuropsychology, based not only upon the latest views in neurology but upon the psychopathology of Freud and Jung, deserves careful consideration. Although the dualist interpretation of the nervous system is still sub judice, and the distinction between instinct and intuition largely a matter of verbal difference implying degree, Mr. Dibblee has certainly given both psychological and methodological significance to the duality of instinct and intelligence, and, in addition, has drawn for us a very valuable methodological distinction between instinct and intuition. In many ways he supplements some of the vaguer aims of Bergson and Blondel, and gives to these a firm foundation in

neurology. Above all, he creates a world in which neurologist and psychologist can speak almost the same language. Lastly, he treats the psychology of the unconscious in such a way as to melt even the hearts of the intransigent anti-Freudian on the one hand, and the antineurological Freudian on the other. Even should Mr. Dibblee's views need some modification before they are generally acceptable, his arguments and suggestive speculations will afford an alembic from which some day may be distilled a combined science of neuropsychology.

HUMAN PATHOLOGY.

Second edition. By H. T. KARSNER. London: J. B. Lippincott Company. 1929. With 19 coloured plates and 433 text-figures. Pp. 980. 45*s*.

THE appearance of a second edition of Prof. Karsner's book three years after the first shows that it must have found favour with a good many people besides his students at Cleveland, Ohio. This is not surprising, for it is a clear, definite, well-illustrated account of human pathological anatomy and histology ranking for English students on a level with the text-books of MacCallum and Muir. The arrangement is conventional, which makes it easy to find one's way about but leads to the absurdity of grouping all "pigmentations" together; tattoo marks, hæmosiderin, and melanotic tumours have about as much in common as the pathological changes found at autopsies done on Tuesdays. The book also follows customary lines in almost entirely neglecting physiological considerations; we must apparently wait longer than we had hoped before "Human Pathology" amalgamates disorders of structure and function into the coherent whole which in fact they are. Of its kind Prof. Karsner's book is an excellent example and students will find it useful, if at times a little dull.

A TEXT-BOOK OF AMBULANT PROCTOLOGY.

By CHARLES ELTON BLANCHARD, M.D. Youngstown, Ohio: Medical Success Press. Pp. 404. £2 2*s*.

Dr. Blanchard's text-book on Ambulant Proctology is likely to accompany a new and better era in the treatment of the minor rectal diseases, and it will be studied by proctologists far and wide. His contention is that ambulatory methods can be adopted with advantage in many rectal conditions. Certainly no one can read his book without being impressed by his candour, and by the convincing way in which his arguments are set out. One of the chief objects of the book is to press the claim of the injection technique for internal hæmorrhoids which was originally described by Albright; the solution is 5 per cent. phenol in vegetable oil, which is injected through multiple punctures high up above the pile-bearing area; an induration is produced and is followed by contraction, and adhesion of the mucous membrane. Dr. Blanchard has had a long experience of this method, and speaks with authority when he condemns operative removal of internal piles or the use of the strong solutions such as the 20 per cent. carbolic in glycerin and water. The book contains the instructive and at the same time entertaining report of a typical interview with a patient. The story is of Mr. William Brown, "one of the American go-getters," suffering from hæmorrhoids and constipation, and of his conversion to a better mode of life; it will remind every proctologist that he must be a physician as well as a surgeon.

The chapter on ano-rectal fistula will indicate how this difficult condition can be treated, if desired, by multiple operations on the ambulant plan; the author lays stress on the importance of drainage, and describes his use of an antiseptic ointment termed guidol for packing and diagnostic purposes. Chapter X., on pruritus ani, deserves close attention. Dr. Blanchard teaches that pruritus is not a local condition, but one due to abnormal intestinal fermentation. Treatment accordingly is for the most part intestinal and dietetic, and the only local treatment advised is, in severe cases, the making of two to four drainage openings round the anus. Ball's operation and its modifications are condemned. The chapters on anal fissure, dietetics, and constipation all contain much useful detail; those on "business aspects and office management" will doubtless be appreciated by some of his readers.

The book radiates Dr. Blanchard's enthusiasm for proctology, and his desire to extend the knowledge of those methods which from long personal trial he considers to be sound. His methods of examination, instruments, formulæ, and agents are described in the greatest detail.

THE SANITATION OF BUILDINGS.

By E. THOMAS SWINSON, M.R.S.I. London: Humphrey Milford, Oxford University Press. 1928. Pp. 465. 30*s*.

THIS book deals comprehensively with most aspects of sanitation in relation to buildings, including dwellings, schools, trade premises, public buildings, hospitals, and other institutions. In twenty-four chapters detailed information is given on the choice of building sites, light and air environment of buildings, dampness, special hygienic requirements, sanitary fittings, drainage and sewage disposal. The book is well up to date in its subject matter and the illustrations are clear and well reproduced. Very few of the author's views or statements are open to criticism. The reference to a modern form of valve closet might be regarded as conveying the impression that this type of closet had received any modern acceptance, which is of course not the case. The statement that a local authority's power to deal with dampness as one of the factors rendering a house not reasonably fit for habitation is limited by the rental value mentioned in Section 1 of the Housing Act is not strictly accurate; moreover, the expression "working class" as defined in the Fifth Schedule of the Housing Act, 1925, does not apply to every part of the Act, as a footnote on page 123 would appear to imply.

The author explains in his preface that it has been found impracticable to deal with questions of water supply, lighting, warming, and ventilation of buildings. From the medical standpoint these omissions must be regarded as unfortunate, since there are probably no factors in building construction and management which have a more direct bearing upon the health of the community. The book should nevertheless be useful to medical officers of health, sanitary inspectors, and those who are studying sanitation.

WESTMINSTER HOSPITAL REPORTS.

Vol. XX., 1924–1928. Edited by STANFORD CADE and DONALD PATERSON. London: H. K. Lewis and Co. 1929. Pp. 343. 7*s*. 6*d*.

THE twentieth volume of these Reports, covering the last four years, contains a number of original papers and also detailed reports of the work of their departments by the three registrars and the pathologist. Sir James Purves-Stewart publishes an article on pneumoradiography in the diagnosis of cerebral tumours, and Mr. E. Rock Carling writes on periarterial sympathectomy, and also, in conjunction with Mr. Stanford Cade, supplies a review of the cases treated by radium; Dr. A. Abrahams discusses the influence of exercise upon the cardiac rate, and Dr. F. M. Allchin the value of X rays in lymphadenoma. Cases of mycosis fungoides and cysticercus cellulosæ are reported by Dr. S. E. Dore and Dr. Braxton Hicks respectively, and there are papers by Dr. D. Paterson on spinal muscular atrophy, Mr. A. F. MacCallan on cataract, and Dr. H. A. Dunlop on the effect of ether on the action of adrenalin on the circulation.

THE LANCET.

LONDON: SATURDAY, DECEMBER 21, 1929.

SUGAR IN THE CHILD'S DIET.

IN Victorian nurseries sugar in tea and on porridge was strictly rationed, and jam as an alternative to butter was discouraged except on the last slice. Moreover, the child whose unsatisfied craving for sugar led him to spend pocket money on sweets was condemned as greedy. Nursery traditions die hard, and probably the most common adjustment needed in the menus of children of the upper classes, otherwise well cared for, is a considerable increase of sugar. These children are encouraged to drink top milk and to eat plenty of cream; butter is offered to them freely, and a considerable amount of fat is used in cooking their meals. But their carbohydrate ration is limited. The children of the poor, on the other hand, are fed for the most part upon a diet containing an excess of sugar, since a calorie of fat costs more than a calorie of sugar. Bread, biscuits, potatoes, and sugar make up too great a part of the whole. These distinctions in dietetic habits ought to be remembered by doctors who, as students, are trained on the children of the poor. In hospitals and welfare centres they see nearly all children improve when extra milk is added to the diet, and they are apt to forget that the régime of the private nursery differs widely from that of the hospital class. Incidentally in most of the pamphlets issued in the propaganda of public health authorities the needs of the poorer classes alone receive attention.

A certain proportion of children, mainly among the upper classes, are energetic, restless, and prone to exhaustion; they suffer at intervals from attacks characterised by pallor, prostration, increased irritability or nervousness with pyrexia or with vomiting At such times a relative intolerance for fat, a comparative failure to complete the metabolism of fat in the available sugar is, in part at least, the explanation of the recurring waves of disturbed health; and for the time being a larger intake of sugar and a reduction in the intake of fat may be necessary. All forms of sugar and of starch are serviceable in the treatment of this condition, but glucose in solution is becoming first favourite. A more obvious device would be to prescribe additional quantities of the ordinary cane-sugar in household use, but in certain children cane-sugar is apt to cause excessive fermentation accompanied by diarrhœa or urticaria.

Theoretically there should be no great difference between the food values of cane- and beet-sugar, although there is a lingering suspicion among dietitians that the former is in some way more useful, ounce for ounce, as a foodstuff for children. The sweeter taste of cane-sugar is not easy to explain, unless it contains some free glucose. It has been stated that cane-sugar, even when pure, contains appreciable quantities of monosaccharides, while beet-sugar certainly does not contain them. The contention that either of the disaccharide sugars in the form of highly refined crystals could contain any accessory food factor of importance lacks plausibility. However this may be it is clear that in the young infant the tolerance of the different forms of carbohydrate remains distinct. Thus, if more than 10 per cent. of maltose is given diarrhœa may result, but a further addition of dextrin and possibly of a third carbohydrate, for example, starch, may be made without causing disturbance. Much more carbohydrate can be taken if it is given as a combination of different forms. For children who suffer from the recurrent attacks mentioned above a diet with a relatively high content of starch and cane-sugar and a relatively low content of fat—in short, an anti-ketogenic diet—is recommended by such authorities as Dr. H. C. CAMERON, with the addition of glucose. By combining different forms of carbohydrate it is possible to keep within the limits of tolerance, though the total carbohydrate intake is very high. Glucose appears far less liable than cane-sugar to cause fermentation. In infantile diarrhœa it seems to be the only sugar which does not aggravate the excessive fermentation or interfere with appetite when it is taken between meals. Moreover, it is much less sweet than cane-sugar, and can therefore be given in greater concentration in fruit juice without making the mixture unpalatable. This is especially important, inasmuch as some of the nervous children who are most in need of sugar have a dislike of sweet things.

RELIEF OF BLINDNESS IN INDIA.

WE have received from the All-India Blind Relief Association a printed copy of a letter addressed to the Viceroy, suggesting that a suitable use of the Thanksgiving Fund raised in India to commemorate the KING'S recovery would be the inauguration of a sound scheme of ophthalmic relief for the whole of India. The President of the Association is Mr. C. G. HENDERSON (late I.C.S.), there are three Europeans and three Indians on the committee, and its headquarters are in Bombay. The primary aim of the Association is to make known the fact that there is great need for more ophthalmic work than is being done at present; a secondary aim is actually to do some of this work. Figures are given showing what has been done by the agents of the Association in certain districts during the last seven years. In one district, for instance, 1866 operations were performed in 1927, and in the following year 29,000 cases were medically treated. The aggregate of cases treated in other districts runs into many thousands, the workers being paid from funds raised by the Association, and enjoying the help of a few doctors lent by the local government. The breadth of view taken by the Association is seen in the letter which says clearly that its sole object is the extension of work dealing with eye disease and that it is willing to place its experience at the disposal of a State system, should one be established, even though it had itself no part in it. It suggests, however, that there may be a certain elasticity and enterprise in a non-official agency that cannot exist in a purely governmental agency.

There is evidence in the letter that the work has the approval in certain districts of the Surgeon-General with the Government of Bombay. He says, "one aspect which has perhaps not been adequately

realised is that it galvanises existing hospital dispensary work in eye diseases." India has a population of 320 millions, and eye disease is only one of the many important medical problems which confront the authorities. It is obvious that only a government agency, or one working closely with the government, could deal with the problem as a whole, and that all existing medical agencies might have their place in any comprehensive scheme. The question that arises, is what is the standard of their treatment? Is it not capable of improvement? It must be admitted that the teaching in ophthalmology during the ordinary medical curriculum in India, as in other countries, has in the past been decidedly scanty, and the efforts now being made to remedy the deficiency cannot affect men who have already qualified. Those who work in outlying dispensaries are apt to fall into a routine application of favourite remedies, not necessarily the most efficient. In the ordinary post-graduate classes as a rule not much attention is given to eye work; if an examination for promotion to a higher grade follows the course, as used to be the case in India, matters of detail, so essential to successful treatment, tend to take a secondary place. A well-thought-out short "refresher" course in the treatment of trachoma, of a week's duration, given by an expert at a big hospital in a suitable centre, would do much good.

Such was the practice in Vienna before the war. The course here included lectures and demonstrations of suitable cases, and daily attendance in the trachoma clinic, where the usual operations on the lids were taught to practitioners working in trachoma districts, who went back to their work keen to carry out what they had learnt. There is an inevitable tendency in districts where trachoma is common to get bored with the treatment and to devote more time and energy to (say) operations on cataract, which give more dramatic results. It should not be forgotten, however, that inefficient treatment, or the failure to do a lid operation at the proper time, may result in a trachoma patient losing the whole or part of his sight and being a burden to himself and the community for perhaps 50 years; whereas the expectation of life of a senile cataract case is only a fraction of that period. If it were possible to send out a keen man, well trained in ophthalmology, who would camp for a short period near each outlying dispensary, who would see the patients with the sub-assistant surgeon in charge, offering him suggestions and advice, and generally helping him with the treatment of his eye cases, it would tend to raise the standard of his treatment. And this could be done without casting any slur on the present workers in India. The teaching in ophthalmology in Austria before the war was as good as, if not better than, any in Europe, yet they found it useful to adopt a system of "refresher" classes.

THE HARBEN LECTURES AND VITAMIN B.

BY some curious twist of taste or habit, very few people generally go to the Royal Institute of Public Health in Russell-square to listen to the annual Harben Lectures. It is a pity that this should be so, for learned and distinguished lecturers commonly have personality as well as something to say and they will say it all the better under the stimulus of a good audience. We hope at any rate that plenty of people who did not hear the series lately given by Prof. R. A. PETERS of Oxford on the "Coördinative Biochemistry of the Cell and Tissues" will read his discourses which are in course of publication in the *Journal of State Medicine*; they tell us a good deal and, which is better, suggest much more. Prof. PETERS begins by pointing out that descriptive biochemistry has developed into dynamical biochemistry. At first it was necessary to isolate and identify the various chemical substances in live animals and plants and there is still evidently much to be done in that line. But just as biological theory has arisen on the descriptive foundation of the early naturalists, and zoologists now want to know how animals live as well as what animals there are, so biochemists are becoming more and more concerned with how live matter works on the basis of the substances which have been identified.

Life consists of a continued and orderly stream of reactions; there is nothing chaotic about it and Prof. PETERS addresses himself to the imagination of some structural system on which this fundamental characteristic might depend. It is obviously not enough to appeal, as many have done, to the colloidal condition of the substance of cells; a colloid mush might reach any limits of incoördinate behaviour. He points out that some units of living matter are so small that the ordinary statistical physico-chemical laws can hardly apply. An organism which is just visible (0·25 μ) occupies about the same volume as 555 million molecules of water and by our ordinary conceptions will contain only one hydrogen ion at pH 7·0; filter passers, with perhaps one-hundredth the bulk, will be still more remote from the common circumstances of chemical reactions. The perceptible histological structure of a cell fails altogether to provide a framework on which the due sequence of its activities might be arranged. Prof. PETERS suggests that it is now legitimate to imagine a molecular framework. It is known that molecules at surfaces are orientated in a regular fashion; the molecules of palmitic acid, for instance, spread in the thinnest possible film on water, are like sausages tightly packed together with the methyl group always towards the air. The interior of a cell may have an elaborate molecular structure made up on this kind of plan and ultimately based on the surfaces of the proteid constituents which form a sort of central mosaic from which chains of other molecules radiate in an orderly way. The activities of this structure are controlled in the main by changes of reaction and consequent changes in absorption, and in this way, the lecturer urged, it was possible to picture the dynamic chains of chemical reactions taking place, controlled inside the cell not by the ordinary laws of mass action but by "the exigencies of the matrix;" he did not, however, explain whether by this he meant the needs of the proteid basis in a teleological sense or the inevitable results of its constitution. Such disciplined speculation needs no defence, and from it Prof. PETERS turned to the hard experimental facts about vitamin B to which he and his collaborators at Oxford have devoted so much attention. The simple fact that there was something in rice polishings and yeast which prevented and cured beri-beri has developed into a complicated and tangled tale. Prof. EIJKMANN'S original discovery in applied bacteriology has indeed been so fruitful in opening up new fields of knowledge that the award of a Nobel Prize to him the other day seems particularly appropriate.

We now have B_1, which cures polyneuritis in pigeons, and B_2, which cures a dermatitis in rats, which seems to be the same thing as pellagra in man; on these and their certain distinctness GOLDBERGER, CHICK and ROSCOE and other observers are agreed.

B_1, or "torulin" as Prof. PETERS calls it, seems to be generally necessary for the growth of all cells—rats, pigeons, bacteria, and tissue cultures; yeast cells can make it for themselves. But to these a third, and possibly a fourth, factor in the vitamin B complex, both necessary for rats, have to be added, and yet a fifth, needed by pigeons (which can do without B_2) but not by rats. All of these minister in some way or other to the maintenance of the normal metabolism of animal organisms; at the moment the complexities of the situation are evidently beyond anyone but the experts. We suspect, however, that Prof. PETERS is right when he claims that a definite test such as the ability to cure polyneuritis in a pigeon fed on polished rice is a safer guide than the measurement of a vastly complex event such as the growth of a young rat. And in his third lecture Prof. PETERS takes up a very interesting and relatively neglected side of the vitamin question—how the deficiencies produce their symptoms. Animals deprived of vitamin B in a broad sense waste because their tissues cannot use the food. Food is absorbed but there is an internal starvation which leads secondarily to loss of appetite. This failure is shown by the fact that glucose injected into the blood of animals deprived of vitamin B does not disappear as quickly as in normal animals. Prof. PETERS and his co-workers have endeavoured especially to ascertain what B_1 does and they make out a good case for believing that this is the fraction particularly concerned with carbohydrate metabolism, and especially with the removal of lactic acid in the Meyerhof cycle. The symptom of opisthotonus in pigeons appears to be directly due to an excess of lactic acid in the brain and it is cured most quickly by injecting concentrated preparations of torulin locally. Absence of another fraction of B leads to heart-block and a remarkably slow pulse, and the puzzling question of œdema (emphasised in the clear clinical distinction between "wet" and "dry" beri-beri) may find its solution in another factor which coöperates with torulin in regulating the distribution of water in the body. Finally, there is evidence of a factor concerned with the proper metabolism of proteids, present in yeast extracts containing B_2. The answer to the question whether vitamin B is concerned with metabolism as a whole or with proteid alone or carbohydrate alone is that it influences all three. Exactly how remains to be discovered. Meanwhile we should all do well to take Prof. PLIMMER'S advice and eat plenty of it.

COSHAM HOSPITAL.—The report of the committee appointed to inquire into animadversions upon the administration of this Ministry of Pensions hospital has now been published, and is a complete vindication. It will be remembered that a coroner's jury which sat upon the death of a patient found a verdict that he died as the result of unnecessary violence and declared in a rider that "very grave maladministration" existed at the hospital. The committee are "satisfied that there is no ground to justify" the rider, and add that "on the contrary, we find that the hospital is well and properly administered, and we have formed a high opinion of Dr. Paul's capacity as an administrator of this institution." Their efforts to obtain the testimony of witnesses who could bring criticisms to bear on the administration of the institution proved singularly unsuccessful, only one such witness coming forward. Other witnesses who had responded to their invitation "could only speak well of the hospital." The committee consisted of Sir Frederick Willis, Mr. J. Bromley, M.P., Major J. B. Brunel Cohen, M.P., Mr. Isaac Foot, M.P., Sir Adair Hore, and Dr. E. Mapother.

Annotations.

"Ne quid nimis."

EPSOM COLLEGE.

WITHIN a few days Epsom College will reach the seventy-fifth year of its life, having been established as a public school with a Royal Medical Foundation in 1855. The details of the Foundation are set out this week in an advertisement received from the College, and the claims in that advertisement are so accurate and so well advanced that we ask readers to consult what the College can say about itself, without repeating the story here. It is sufficient to say that a life of three-quarters of a century has been a record of increasing usefulness. But the message of the advertisement is—Why not subscribe to the support of an institution whose activities are so practical and whose design is so good? John Propert founded the College with the intention of providing education for 50 boys, the children of medical men whose circumstances precluded the boys from enjoying the opportunities usually at the disposal of the sons of the professional classes. From a further fund pensions are granted in response to suitable applications from medical men or their widows. The net result is that at least £9000 is required annually to meet the joint demand. And only a small fraction, some 6 per cent., of registered practitioners support the Foundation. Once again at this season of the year we urge upon our readers the strong claims upon them of Epsom College. The Medical Foundation is an integral part of the constitution of the College, and the College is a public school open to all, where the sons of medical men in association with lads of a comparable class can obtain a first-class education. One of the greatest anxieties which a medical man may have, an anxiety that haunts many during their professional life, is in regard to the education of his children. For the most part he pursues a calling which may not enable him to make large savings, knowing the while that incapacity to practise will as surely as death make the education of his children and the sustenance of his wife impossible for him.

The work of the College is carried on with energy, and its story through a long period of years has been, one of progress. But that progress has always been made in the face of financial difficulty. We believe that, at the season when the hearts of all are open to just appeal, that we in the medical profession can find no worthier object of generosity than the Medical Foundation of Epsom College, with its linked generosity towards our widows and orphans.

FIRST-AID IN CARBON MONOXIDE POISONING.

THE ever-increasing incidence of cases of poisoning by carbon monoxide, particularly by exhaust fumes from motor cars, points the need for organised first-aid treatment. In this matter New York seems to be ahead of our great cities. Yet science owes it to the researches of Haldane that the way in which carbon monoxide produces unconsciousness has been grasped. It acts by suspending the capacity of the blood to convey oxygen to the tissues. The air-hunger which results stimulates breathing, whereupon carbon dioxide is unloaded from the blood. But carbon dioxide is the main stimulus to breathing, and in its absence, apnœa may result, just when deep breathing is most needed. Full understanding of what occurs has led to a method of resuscitation in which carbon dioxide is used to stimulate deep breathing. The patient is made to breathe a mixture of oxygen and carbon dioxide; if he is unconscious, artificial respiration is

carried out with the mixture. The combination first recommended was 5 per cent. carbon dioxide and 95 of oxygen, a mixture which some anæsthetists keep ready to hand in cases of respiratory failure. Reasons are now given for increasing the carbon dioxide to 7 per cent., which doubles the normal minute-volume of breathing without causing undue discomfort. We learn from the *Journal of Industrial Hygiene* for November, 1929, that the Consolidated Gas Company of New York at the present time have ten emergency trucks supplied with the needed inhalation apparatus, manned by crews of three. They respond to all notifications of leaking gas, to fires, and to all sorts of situations where asphyxia has occurred or is a hazard. The crews are thoroughly drilled in giving artificial respiration, and in handling unconscious patients. In 1926 they treated 789 cases; in 1927, 715; and in 1928, 850; in these cases the 5 per cent. mixture was used. Since March, 1929, the 7 per cent. mixture has been issued on 300 cases, with great advantage, in the opinion of the trained and expert crews.

THE PORT OF LONDON.

THE 70-mile reach of Thames from Teddington lock to the open sea forms the Port of London, in which one-third of the commerce of the United Kingdom is carried on. Dr. Charles F. White, who was appointed medical officer of health in September, 1928, tells us that in that year 27,711 ships entered the port, 15,936 from abroad. Of these 17,522 were inspected, and in 1463 conditions prejudicial to health were found: 1391 had dirty quarters, 97 leaky decks, 77 bad ventilation, 65 defects in sanitary conveniences, and 55 defects in lighting, while in 48 the crew's quarters were verminous. Rather over half the structural alterations ordered were made before departure. Water is usually taken from the mains, but there are 17 water barges, the water in which was never found contaminated. The water of a ship, among the crew of which several cases of diarrhœa had occurred, had been taken on board at Batoum and showed *B. coli* in 25 c.cm., and *B. ent. sporog.* in 10 c.cm.; its tanks were emptied and cleaned. Infectious cases are sent to the Port authority's hospital at Denton (Gravesend), and the ship spaces are disinfected by fumigation with sulphur followed by washing with izal. Fifty-four cases of tuberculosis and 29 of enteric fever were landed from ships. Handbills concerning free treatment for venereal disease are distributed among the crews; 121 cases came to notice, most of them gonorrhœal. No case of smallpox, plague, or yellow fever appeared, but six plague-infected (black) rats were found in a ship from Bombay. On this ship 30 rats were trapped, and 25 found dead, that is 55 in all, before fumigation by hydrocyanic acid, after which 22 more dead rats were found; no human case occurred. One group of five enteric cases were traced to water taken on board at Buenos Ayres. Of the total number of rats destroyed 11,425 were on board, 9890 ashore; of 1420 examined, only the six mentioned above were plague-infected. On 128 ships fumigated with sulphur the highest number of rats found dead was 320, the average 35, and 58 ships had none. On 47 ships fumigated with hydrocyanic acid the highest number was 106, the average 6, and 29 had none. We might perhaps deduce that hydrocyanic acid fumigation was favoured most by shipowners who took most trouble, by rat-proofing and otherwise, to reduce the rat population of their ships. There was an outbreak of German measles on one of the six training ships lying in the Thames, otherwise these ships were healthy; only one case of tuberculosis was reported from them. Food inspection led to the destruction of 6018 tons of unsound food or its appropriate disposal. Of 50,000 ox-tongues, 6 per 1000 were found affected with actinomycosis; last year the figure was 20 per 1000, suggesting that shippers are now more careful. Caseous lymphadenitis was found in 4 per cent. of Australian and South American mutton carcasses, and condemned accordingly. No undue use of preservatives was observed in imported food. The sanitary regulation of the Port is being continually tightened up, for under the Infectious Diseases (London) Regulations, which came into force in 1927, while trench fever is no longer notifiable, induced malaria (if liable to relapse) must be notified four days before discharge from an institution to the medical officer of the district in which the patient intends to live, while enteric and dysentery carriers must be prevented from contaminating the food or drink of others. During the year 128 inspections of canal boats were made, one owner being fined £1 for not providing suitable heating aboard, and 200 new water-closets were provided in the area in continuation of a policy initiated four years ago.

A DIRECTORY OF THE LONDON HEALTH SERVICES.

A SERVICEABLE handbook, which contains information not so conveniently combined in any other work known to us, has been compiled by Dr. T. T. B. Watson and Dr. A. Welply, under the title of The Medical Signpost and Directory of the London Health Services, 1930.[1] The first part, about a quarter of the whole book, gives general notes, completely documented, on subjects which range alphabetically from Adoption Societies to Zymotic Enteritis. A description follows of the health administration of the 29 metropolitan boroughs, three or four pages being devoted to each. The information given about the boroughs includes the name and official address of the medical officer of health, and the facilities available in the way of hospitals, clinics, and convalescent homes; what diagnostic help is to be had and where the coroner and the relieving officers can be found; what charitable organisations exist and how their help can be enlisted and so forth.

A few pages at the end of the book are left blank except for headings under which practitioners are urged to provide notes for the use of locum-tenents. It frequently happens that the doctor whose practice is being taken over is unable either through illness or through absence to hand on information verbally to his temporary successor, and when the locum is not aware of the daily routine the practice must suffer. It is suggested that the practitioner who buys the book should at once fill in the details, so as to have ready prepared a list of practical points which may well be forgotten in the bustle of the change. The locum wants to know the methods of keeping accounts, the addresses whence nurses, drugs, instruments, and bottles are usually obtained, the nursing homes habitually used, the appointments held, the consultants whose advice is valued. The lay-out of the dispensary, the names of other doctors in the district, the fees charged and how they are collected, all these have to be passed on, and considerable time is saved if the locum knows exactly where to find instruments, throat swabs, and stationery forms. A blank sheet is left for a sketch map of the district.

We find singularly few omissions in any portion of the work. Such new ventures are mentioned as the Chelsea infant welfare centre for the professional classes, but no note is made of the centres where instruction on birth control is given by medical men and women. Among institutions devoted to cancer, the new Marie Curie Hospital appears, but not the Mount Vernon Hospital, Northwood; evidently the Parliamentary Act sanctioning the change in the objects of this hospital was not noticed by the authors, since two beds for tuberculosis at this hospital are still said to be allocated to the Borough of Hampstead. The list of the fees charged for pay-beds in various London hospitals are set out, also the procedure as regards

[1] Published by Stanley Woodfield, Enfield, Middlesex. 1929. Pp. 216. 10*s*.

medical fees and the extent to which the warded patient's practitioner can keep in touch with him. The days for attendance of out-patients in the special departments of the teaching hospitals will be appreciated. Altogether this is a useful compilation whose authors deserve the thanks especially of those practitioners who are newly resident in any district.

THE DIFFICULT CHILD AND THE TEAM METHOD.

THE difficult child has doubtless been with us as long as the poor, but has only lately been dignified with the title of a social problem. It is probably true that far more children are "difficult" nowadays than they were before the war. That conflict acted in various ways. Primarily it was, after all, only a gigantic symptom of psychopathic disease in the world's organism, the outward and visible sign of an inward problem to which the delicate psychological adjustments of the child are peculiarly sensitive. That disease is not yet cured. Secondarily, war meant that one generation of children was brought up under very abnormal conditions, often with little or no paternal influence and with a maternal element distorted by war work, privation, or anxiety. Thirdly, it made a profound difference in the outlook of the youth of the period, and their uncertainty in a tottering world is reflected in their children to-day. Those who recognise a very large and very grave "child problem" are divided in their views as to the best method of dealing with it. A method which has found much favour in America is the team method, or child guidance clinic, where psychiatrist, pædiatrist, psychologist, and lay social worker pool their efforts in an attempt to help the child to adjust to the reality of its environment. This was described at the recent discussion reported in our columns last week (p. 1261). American methods do not always suit this country, but the child guidance scheme seems likely to be of very great value if wisely and temperately organised and executed. The child guidance clinic at Islington was only opened this year, but has already proved its worth; the clinic at Clarendon-road, West London, has just issued its first annual report on 55 children referred to it for unmanageableness or other sign of disharmony with environment; and it is now five years since the Jewish Health Organisation inaugurated its splendid scheme, of which the outstanding feature is a Child Guidance Clinic at Spitalfields.

The past year in this clinic has—"fortunately," says the report—been free from dramatic developments, but has seen a steady progress towards more rapid diagnosis and greater facility in placing cases into their proper category for treatment. After the preliminary conference, a child is usually grouped in one of four classes: (1) for social investigation and social and familial correction or adjustment; (2) for educational and scholastic adjustment; (3) for personal psychological investigation by the psychiatrist; and (4) for joint activity of the whole clinic unit in association with any bodies interested in the case. The work then proceeds until the physician calls another conference for the coördination of investigation. The clinic had the courage from the start to reject hopeless cases instead of wasting its time and endangering its reputation by spending weeks on obstinate material too deeply buried in the social morass or too entangled in the meshes of constitutional defect to yield to an attack of any kind. The psychologists are agreed that cases are on the whole being seen too late; the majority of the children are between 11 and 12, and figures indicate that a large number of cases pass unnoticed until the problem reaches a sufficient degree of intensity to be remarked by parents or teachers. A poor physical constitution, it has been found, is a far graver factor in prognosis than a bad heredity, and the "backwardness" which appears so often in the complaint is far more often relative and emotional in origin than inherent. So far the work has been intensive and every case has been investigated with great thoroughness, but the clinic hopes in future to take another type of case for tentative advice and superficial study only, and thus to enlarge the scope of its work. Another project is to enlarge the waiting-room, with its stock of toys and books, into an elementary nucleus for occupation therapy. A ward for observation is urgently needed.

Another activity of the Jewish organisation is the supervision of evening schools, the hygienic conditions of which are often far from satisfactory. There seems to be a lack of appreciation of the serious dangers of insanitary and uncomfortable evening schools. Among other activities are research work, health education, and work for Jewish mental defectives. Dr. A. Sourasky is investigating the visual defects of Jewish boys and the incidence of cancer amongst Jews, and Dr. Emanuel Miller is to start an inquiry into the distribution of mental disorder among them. The Islington clinic is helped on its way by a grant from the Commonwealth Foundation in America, but the Council of the Spitalfields clinic feel acutely that their work is not sufficiently known to attract the funds they need and is yet so essentially personal and intimate that it cannot be advertised. The really difficult cases seen at the clinic, for instance, are too technical or unsuitable for illustrations, and those where the problems are superficial do not give a good idea of the arduous work or heavy expenditure involved. Their report is an extremely interesting document which should be read by all interested in the public health as well as by all members of the Jewish community. We shall look forward to the first report of the Islington Clinic next year.

PHENYLHYDRAZINE IN POLYCYTHÆMIA VERA.

THE value of phenylhydrazine in the treatment of polycythæmia was discussed at a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on Dec. 10th. A number of speakers testified to the value of this treatment, by which it is possible to reduce blood counts of eight or ten million red cells to normal levels in a few weeks. The technique usually adopted is to give capsules of 0·1 g. of the substance by mouth; the total dose, which is decided by observations of the blood count at frequent intervals, being usually not much in excess of one gramme. The ingestion of a gramme or more within a few days can produce toxic effects. Several observers had reported the incidence of jaundice, with bile-pigments in the urine, and an immediate direct van den Bergh reaction following treatment. But nothing more serious than a transient jaundice was observed by any speaker. As regards the general condition of patients treated with phenylhydrazine there was a general agreement amongst speakers that the giddiness, headaches, clouded intellect, and other common symptoms of polycythæmia vera, showed a notable improvement. Emphasis was laid on the fact that from the patients' point of view the method is much less disturbing than treatment by venesection or by irradiation of the bone-marrow. At the same time certain potential dangers must not be ignored. The toxic effects are probably due to hepatic poisoning, and in patients who have jaundice before treatment, further damage to the liver might easily prove serious. Cirrhosis of the liver has been known for many years to be an occasional accompaniment of Osler-Vaquez disease, and in its presence any drug with a toxic effect on the liver might be dangerous. Dr. L. E. H. Whitby drew attention to the frequent warnings in the literature that the appearance of a leucocytosis is a danger-signal during the administration of phenylhydrazine: in a series of experiments on animals he had failed to make any observations in support of this warning, and in the cases reported at the meeting by Dr. Izod

Bennett and Dr. D. T. Davies he had found that a rise in the white count ranging from 15 to 30 thousand was almost invariable, and did not indicate the onset of toxic manifestations. As regards the future of these patients, unfortunately the reduction in the red cell count was never more than temporary, although small doses of the drug given occasionally would keep the polycythæmia within reasonable bounds. Whether such treatment continued over a period of years will produce permanent damage to the liver is a question which present experience cannot answer.

THE M.R.C. AND GOOD ENGLISH.

THE lot of the writer of monographs is a hard one, for he must have done some hard thinking, and it is not made easier by the Medical Research Council which, in our view, imposes upon him salutary rules inspired by wisdom and experience. He is advised not to commence an article, he must begin it. He cannot have been engaged in a study of his subject; he has just studied it. He should not write in conjunction with a friend; but just with him. And he should not collect a considerable amount of material or a considerable number of facts, he should only collect much or many of them. In short, restrictions of liberty have been suggested, so that his manuscript will undergo a 20 per cent. reduction (or, as one might say, be one-fifth shorter) and eventually he may find himself writing quite good English without the help of the Publications Department of the Council. In the Notes upon the Preparation of Reports for Publication, which have just been issued in a revised edition after an interval of nearly nine years, the advice remains substantially the same except for the addition of two useful appendices: one of shorter and better equivalents for long words or phrases, the other a list of abbreviations of the names of journals taken from the World List of Scientific Periodicals prepared under the direction of the Keeper of the Department of Printed Books in the British Museum. The Notes have not been placed upon sale, but have been widely distributed among research workers in medicine. The advice is not oppressive or cramping to an author's style; by surrendering his liberty in non-essentials he will gain the freedom in essentials which really matters. The Notes are free from the touch of irony or subtle malice which seems almost incumbent on those who desire to impose their own literary style on others. It was a wise author who admitted the many ways of writing tribal lays every single one of which was right. The Council's censor has refrained from such banal quips as advising a would-be author to add a bibliography to his paper rather than a list of references and never to write the patient died but to say he ceased or "exitus lethalis." He might have said: If you feel the urge to write a medical article do not restrain yourself merely because you have nothing new to say and hardly know how to say it; facts and theories in medicine must be repeated again and again to drive them home. It is this sort of advice that estranges the earnest young writer and puts him off his stride when a more sympathetic mentor would be helpful in setting his feet on the narrow path of successful authorship.

Comparison of the Notes of 1929 with those of 1921 reveals one alteration for which we are profoundly grateful. In counselling the avoidance of obscure and misleading abbreviations the Publications Department has now fallen in with the continental practice of using the single letter g as an abbreviation for the gramme when standing alone or in its various compounds (kg., cg., mg.). Owing to the unfortunate similarity of the abbreviations used for the words gramme and grain these words should always be spelt in full if there is any possibility of doubt as to which unit is specified, but the Council has seen the wisdom of adopting the symbol g. for the gramme which is slowly but surely taking its place as the unit of weight throughout the civilised world. Rather singularly in doing so the Council has gone back on its abbreviation for cubic centimetre, which in 1921 was given as c.cm. and is now c.c., an exception to the rule made, it is stated, in order to conform with the general practice. But here, again, we feel that to make the exception is to introduce disorder into the very heart of exactitude. No doubt to those who are brought up in chemical laboratories a hundred-see-see measure or a ten-see-see bottle has become a habit of mind; to the chemist the see-see is the only unit, and the exception scarcely matters, but the biochemist has to do as much or more with the cubic millimetre, with its orthodox abbreviation. There can surely be no hardship or ambiguity in writing c.cm. and we trust that in this particular writers of monographs will assert their individual judgment against that of the Medical Research Council.

PSITTACOSIS.

IT is only recently that any real headway has been made in the investigation of the complex salmonella group of bacteria. It is now recognised that mankind shares infection by this group with a great variety of animals, and that the normal source of infection is the animal. A prominent member of the group, and a very widespread one, is *Bacillus ærtrycke*, which is often described under one of its very numerous synonyms. Among the rarer manifestations, at any rate in man, is the infection of parrots known as psittacosis, which seems to be transmitted from sick birds to man, and is held responsible for the recent death of Dr. D. L. Thomas, M.O.H. for Stepney.

In the latter part of the last century much attention was paid to the condition, especially in Paris and in Rome; a correspondent of THE LANCET in 1899 wrote with disgust of the hundreds of deaths from this disease in imported parrots, and in 1897 we published accounts of a number of fatal human infections in Italy. In Paris, in 1892, a real epidemic was recorded, with a case mortality of 45 per cent. Nocard, in 1893, recovered an organism from the bone-marrow of an infected bird, and Gilbert and Fournier, in 1896, from a human case, which has since been known as *B. psittacosis*, until it was recognised as the familiar *B. ærtrycke*. So recently as July 20th of this year Dr. A. P. Thomson reported in our columns a case in which the patient appeared to suffer from atypical fever, with a positive agglutination to *B. paratyphosus* B. She had nursed a sick parrot, and her little niece solved the problem of her illness by suggesting that "auntie has what the parrot had." From a developing parotitis (suitably enough) an organism was recovered which was stated to agglutinate slightly with paratyphoid B serum. Agglutination, however, does not seem to have been tested with *ærtrycke* serum, and the organism was at first described as Gram-positive. Three other less well-authenticated cases were recorded in the same district.

Many authorities deny that an infection is transmitted by parrots. To-day, at any rate, psittacosis is exceedingly rare in man, and, indeed, very uncommon in birds. At the London Zoo it is unknown, and it is possible that the disgraceful methods of transportation which our correspondent discussed in 1899 have to-day been abandoned, to the advantage of man and of parrot. The condition is so seldom met with that the diagnosis is scarcely one that should spring to the lips with confidence. The essentials in making out such diagnosis are a fulminating infection, with a positive agglutination to the salmonella group of organisms, the recovery of an organism of that group, and its identification with *B. ærtrycke*. If combined with the recovery of an identical organism from the incriminated bird such a history would be convincing. It is hardly necessary to add that the risk of contracting the infection from domestic parrots is remote, though it is probably wise to beware of such birds as develop an illness soon after importation into this country.

THE MEDICAL DIRECTORY.

THE new Medical Directory reaches us on Dec. 11th, well up to time. It is the eighty-sixth annual issue and the publishers have almost left off looking for new features, being as contented as are most of their subscribers with the present arrangement of the material. Graduates and licentiates in dental surgery, whose names were excluded from the Directory in 1925 to appear in a separate Dental Surgeons' Directory, are justified in regarding the discontinuance of this volume as a grievance. We do not know what may be felt by others who use the Medical Directory for constant reference—we have heard regret expressed for the omission of the year and the key-names at the head of the page—but the two inconveniences which we encounter with any frequency are the absence of private addresses under the heading of Naval, Military, Indian, and R.A.F. Services, and the absence of an alphabetical index covering the names in all seven sections. The latter might be rectified by a sudden act of grace in 1931 but the former might take long to achieve. The volume has increased in size by about 30 pages this year, owing principally to the inclusion of 391 more names. This annual increment, by far the smallest in the last ten years, is the net result of a profit and loss account, for the sections headed Scotland (−93) and Ireland (−120) have diminished, while those headed London (+48), Provinces (+304), Wales (+4), Abroad (+232), and Services (+16) have increased, although in unequal measure. We have given the actual figures in parentheses. It is, no doubt, time that the rate of increase did diminish unless new fields of medical practice are to be explored, for there has been the enormous increment of 10,257 names during the decade 1920–30, and obviously this could not go on safely. A special word of commendation might be given to that part of the introduction which treats of the health resorts of the British coasts and has been fully revised. An island may have its drawbacks, but it ensures a coastline sufficient to supply the needs both of its own workers and of visitors from other countries. The English littoral is estimated at 2350 miles, that of Scotland at 2300 miles, and of the British Isles at not less than 6000 miles, even were the circumventor to jump all the narrow creeks. We welcome the care and enterprise of the publishers in producing so valuable a work of reference. The publishers are Messrs. J. and A. Churchill and the price is 36*s.* net.

A NEW CAUSE OF INFLUENZA.

THE recent statement in the lay press that Prof. Falk, of Chicago, has discovered the cause of influenza in a pleomorphic streptococcus does not excite bacteriologists as much as it might have done 15 or 20 years ago. Many alleged causes have been discussed to the point of weariness and it has been realised that any such discovery would require long and searching criticism before it found general acceptance. In the first place, neither the definition of influenza in general nor its diagnosis in a particular patient are simple tasks. Under the convenient name of influenza are included illnesses with a very wide range of symptoms. The clinical recognition of such an indefinite disease is not beyond dispute, unless many synchronous cases occur in the course of a widespread outbreak which is comparable in type to previous acknowledged epidemics. The disease cannot readily, if at all, be recognised in animals, though monkeys, which are said to have been used by Prof. Falk for his experiments, appear to be the most hopeful subjects. The ætiological candidates for the position of causal organism in influenza pandemics have been many; they include Pfeiffer's bacillus, *Bacterium pneumosintes*, various streptococci, and an unknown filter-passing virus, which latter has of late claimed many adherents. None of these has established its claim, but all have much in their favour, especially in connexion with particular outbreaks or certain areas. It is possible that two or more infections may be associated in the same outbreak or even in the same case. The pleomorphism or uncertain morphology of Prof. Falk's micro-organism, which is said to resemble one described by Dr. D. and Dr. R. Thomson in our columns,[1] adds to his difficulties in establishing its importance, since irregularity in shape and size do not make for conclusive recognition. If his conclusions, based on the successful experiments which he is said to have made, withstand the criticism to which they will no doubt be subjected by other bacteriologists, bacteriology will be the richer for a micro-organism pathogenic to both man and monkeys, whose importance is in proportion to its prevalence. Whether the disease it produces is rightly called "influenza" is a problem which will require for its solution observations extending over a long time and a wide area.

THE house and library of the Royal Society of Medicine will be closed from Monday, Dec. 22nd, to Saturday, the 28th, both days inclusive.

AT a recent meeting of the Court of Assistants Lieut.-Colonel C. T. Samman, J.P., was elected to represent the Society of Apothecaries of London on the General Medical Council for one year, in succession to Mr. Samuel Osborn, who has resigned.

THE Royal College of Physicians of London will be closed for the Christmas vacation from Tuesday Dec. 24th, to Monday, Dec. 30th, both days inclusive.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. T. C. H. Neil to be Surg. Lieut.-Comdr.

The following appointment is notified: Surg. Comdr. J. F. Haynes to *President*, for R.A.F. and Medical Officers' Course, and to *Glorious*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub.-Lt. E. G. Thomas to be Surg. Lt.

Proby. Surg. Sub-Lt. H. E. Holling to be Surg. Sub.-Lt.

ROYAL ARMY MEDICAL CORPS.

Capt. E. P. N. Creagh to be Maj. (prov.).

Maj. J. Heatly-Spencer is apptd. a Professor, R.A. Med. Coll., vice Lt.-Col. W. P. MacArthur, vacated.

TERRITORIAL FORCE.

Capt. W. L. S. Cox, to be Divl. Adjt. 53rd (Welsh) Div., T.A., vice Maj. J. K. Holland, who vacates the appt.

Capts. W. Gault and W. B. A. Lewis resign their commns.

Capt. J. Rowland, from T. A. Res. of Off., to be Capt.

INDIAN MEDICAL SERVICE.

Lt.-Col. to be Col.: Bt. Col. E. A. Walker.

Temp. Lts. to be temp. Capts.—B. R. Bhaskar, H. K. Handoo, L. D. Sarronwala, P. N. Sathe, D. N. Basu, H. S. Ahluwalia, M. N. Pai, and T. R. R. Pai.

Dev Datt to be Temp. Lt.

Maj.-Gen. R. W. Anthony retires.

[1] THE LANCET 1927, i., 252 and 1125.

A PROVINCIAL HOSPITAL FUND.—Sir Gomer Berry, High Sheriff of Bucks, last week opened two new wards of the Royal Buckinghamshire Hospital at Aylesbury. He suggested that a fund for provincial hospitals, similar to the King's Fund for London, should be established and that permission should be asked to call it King George's Fund.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

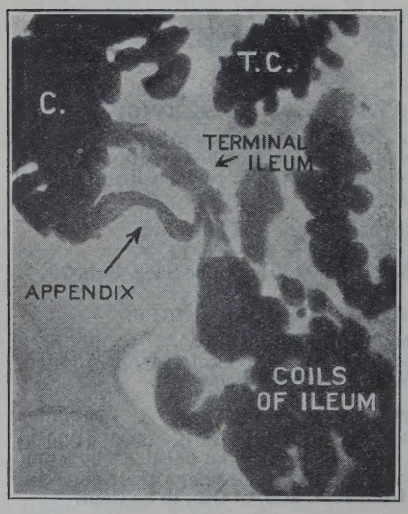
LVII.

INTERPRETATION OF RADIOGRAMS OF THE ALIMENTARY TRACT.

PART IV.*—THE SMALL INTESTINE: THE APPENDIX.

ORGANIC lesions of the small intestine are, fortunately, rare. Symptoms are vague or absent and there are seldom any localising signs. Owing to the divided state of the food when it passes through the small intestine, it is liable not to be seriously delayed or obstructed till a comparatively late stage. Moreover, so far as my limited experience goes, there is little if any indication of spasm, and the lesions that have been found at operation have always shown marked organic narrowing. We depend for diagnosis entirely on the detection of a definite coil of intestine that is distended and in which we note peristaltic movements that fail to pass the opaque food onwards. By manipulation and palpation we attempt to isolate this coil and endeavour to note if the distal end of it is fixed, if there is any tumour, and so forth. If we note such a condition and find one end of the coil fixed, the diagnosis lies between adhesions, cicatrisation of ulceration, or growth. Apart from detecting the resistance of a tumour there are no guiding signs.

FIG. 21.



Condition of cæcal region when patient comes for examination on the second day, having been re-fed five hours previously. There is more food in the terminal ileum than normally on the technique employed and slight stasis. The cæcum is well filled and the appendix is of a large wide gauge type. No concretions noted in it. If the cæcum and appendix were freely movable and there was no pain on pressure on the appendix, this degree of stasis could well be overlooked. C = cæcum. T.C. = transverse colon.

When an obstruction is advanced, however, its presence is always indicated by the fact that in our preliminary examination in the upright position we note the appearance of a number of irregularly scattered air spaces in the abdomen, each with a horizontal fluid lower margin—like the air space in the stomach. Such a picture, apart from the effects of a purgative that is still acting, is certain information that we are dealing with an obstructive lesion in some part of the intestinal tract—perhaps even as low down as the rectum. Whether the radiologist should pursue his investigation and attempt to locate the lesion is more than doubtful, for the condition is possibly already one of urgency so far as the intestine is concerned, even though the clinical picture is still vague and does not apparently call for urgent measures. The responsibility for pursuing the examination, which would necessarily entail delay, should be placed on the surgeon. In one instance known to me the surgeon, who operated at once, found an almost gangrenous length of gut in a patient who certainly presented no clinical evidence that such a finding was at all likely.

FIG. 22.

Appendix as seen 24 hours after food. On double feeding this appearance is often noted on the third day of the examination. Note the loaded condition of the rectum.

The detection of appendicular trouble depends entirely on the technique and experience of the radiologist. Given a standard technique, the radiologist can determine whether there is any delay behind the ileo-cæcal valve. If there is, it is of some importance. He should palpate the filled cæcum and terminal ileum; if he finds it to be abnormally fixed this also is of some importance. He may have to employ posture in addition to palpation in order to bring the cæcum out of the pelvis in certain cases. If in the course of his palpation he finds a definitely tender spot located to the site of the appendix it provides evidence of the utmost value. These three points—delay, abnormal fixation, and localised tenderness—taken together, if they are all positive, make an absolutely definite diagnosis of a chronic appendicular lesion. Tenderness localised to the exact site of the appendix is the one sign that is of conclusive value. The filling and visualisation of the appendix itself is not of great moment (Figs. 21 and 22). If we see it filled, we can palpate it and note whether it is free or fixed in the pelvis or elsewhere, but fixation of the appendix has not necessarily any present pathological significance. If the radiologist has the opportunity of observing the patient for some days, and finds that the opaque food is retained for a prolonged period, he is probably justified in saying that the appendix is not functioning normally. The longest period during which I have known opaque food to remain in the appendix is three weeks. During the game season, however, it is comparatively common to find shot, perhaps quite a number of them, lodged in the appendix for long periods.

The acute appendix is seldom seen in the X ray department. It gives rise to so much localised irritation that we find an empty condition in the cæcum and terminal ileum at a time when we should expect to find them filled. This appearance is suggestive, if not of a comparatively acute appendicular lesion, at least of some irritative condition in the cæcum or thereabouts. The appearance, however, is not at all uncommon in tuberculous disease of the cæcum, an infection that is comparatively rare apart from tuberculous disease in other regions.

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*Parts I., II., and III., respectively on the Œsophagus, the Stomach, and the Duodenum, appeared in THE LANCET of Nov. 30th, Dec. 7th, and 14th. The concluding part on the Large Intestine will appear next week.

Special Articles.

SOME OBSERVATIONS ON SCANDINAVIAN SURGERY.

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III.

Surgical Treatment of Pulmonary Tuberculosis.

Sanatorium treatment in Scandinavia differs little from the routine observed in this country, but in certain types of pulmonary tuberculosis surgical measures are far more freely utilised. All such surgical intervention may be classed as "Collapse Therapy," and the principles on which it is based depend largely on the extent and stage of the disease in *both* lungs. Immobilisation and rest are the ideal and essential features in the treatment of any form of tuberculosis, but in the lungs these are difficult to obtain. Furthermore, the contraction that should result from fibrosis during the process of healing is hindered by the rigidity of the chest itself. Apart from the local disease, the patient has to combat the general effect of the tuberculous toxin. His immunisation and resistance against this are admittedly favourably stimulated by sanatorium régime. The Scandinavians as a rule treat the exudative or progressive infiltrating forms on general lines, but find that the proliferative or fibrosing form requires further measures. Cavities may form and being unable to contract because of their peculiar situation in the lung tissue are secondarily infected; the patient's powers of resistance are diminished, and a troublesome cough inevitably follows. Collapse therapy aims at immobilisation of a part or the whole of one lung by assisting its natural tendency towards retraction. When the lung does retract, cavities are drained of pus and debris, and cough and expectoration soon relieved. The resulting diminution in the numbers of tubercle bacilli is an important social factor as soon as the patient returns to normal surroundings.

Before contemplating collapse of a lung the condition of the opposite side must be taken into careful account, for while one healthy lung is adequate for ordinary respiration, one slightly diseased may not be able to stand the strain thrown upon it when its fellow is out of action; its resistance to infection may be reduced. The set-backs consequent on incomplete retraction are also to be remembered; the risk of exacerbation in the uncollapsed areas of the affected organ is serious. The liability of the right side of the heart to embarrassment from pressure is another possible complication. Ideally the lung that is to officiate should be free from tuberculous lesion, but as this is rarely feasible every effort should be made to exclude the presence of the exudative form which is capable of giving rise to an acute and perhaps fatal broncho-pneumonic "flare."

The selection of cases really resolves itself into the estimation of the degree of activity of the disease in in the more healthy lung. Most dependence is placed on radiographical findings, but not to the exclusion of other clinical methods. Selection of the doctor to undertake the treatment is more difficult since an extensive surgical operation is outside the physician's sphere, and a surgeon may not be qualified to assess the general fitness of the patient and extent of the disease. In a few notable instances ideal coöperation obtains between physician and surgeon—Profs. Key and Jacobæus, of Stockholm, to wit. The alternative lies in complete control by a specialist in tuberculosis, like Dr. Gravesen of Vejlefjord, Denmark, who with a unique experience has complete control of treatment in all stages and forms of pulmonary tuberculosis. Before entertaining the procedures included in collapse therapy it must be realised that the patient's general condition is too often poor, partly as the result of the disease itself, partly from the absorption of toxins from secondarily infected cavities. The existence of tuberculosis in other organs, if mild, is not an absolute contra-indication, though each case has to be judged on its own merits as to what particular form of collapse therapy is to be employed and as to the fitness of the patient to stand the measures suggested. The patients themselves are generally willing to take a risk in the hope of an improvement that will raise them from their chronic unfitness.

In addition to the general indications for collapse therapy as have been mentioned there are also more urgent conditions, such as recurrent hæmoptyses, which may derive considerable benefit.

The operations included in the term collapse therapy are:—

Intrapleural—
- Artificial pneumothorax (A.P.).
- Thoracoscopy with division of adhesions.
- Division of adhesions by open operation.

Extrapleural—
- Phrenic evulsion.
- Extrapleural "plugging"—apicolysis.
- Thoracoplastic operations.

Artificial Pneumothorax.

The indications and technique of artificial pneumothorax in Scandinavian practice are very similar to ours, but its exploitation is more extensive both as a preliminary and as a supplement to some other form of treatment. Many authorities, notably Gravesen, hold that A.P. should be reserved for cases definitely demanding lung retraction, and not for early exudative disease, which would probably respond satisfactorily to sanatorium régime. The advantages of A.P. lie in the easy control of the process, so that re-expansion of the lung can be permitted when it is judged that the disease has been arrested or when there are signs of activity on the opposite side. In bilateral disease it can be used alternately or simultaneously, though care must be taken to leave sufficient healthy lung tissue available for ventilation. It can be said that all cases which may require pulmonary collapse should be started with an attempt at A.P., even though pleural adhesions are anticipated, since the estimation of these cannot be made until the pneumothorax has been attempted. The importance of adhesions is demonstrated by Gravesen, who quotes figures for advanced cases over 2–12 years, in which the capacity for work became 70 per cent. in cases without adhesions, whereas the percentage fell to 33 with localised and to 11 with extensive adhesions. The ease and elasticity of the treatment is somewhat countered by the necessity for "refills" which have to be performed every few weeks. Mobility of the previously fixed mediastinum may produce flutter and cardiac embarrassment, but adhesions with consequent fixation, if not already present, soon form after treatment has been started. Should the lung re-expand by accident or intent generalised pleural adhesions may obliterate the pleural space and prevent further injection of gas.

Thoracoscopy and Division of Adhesions by Cautery (Jacobæus's Method).

The presence of pleural adhesions is a serious drawback to the efficiency of complete artificial pneumothorax. A comparatively small strand may prevent collapse of the very spot that is maintaining infection. Division of selected adhesions may allow satisfactory collapse and maintenance of a complete pneumothorax. Gravesen's figures in A.P. illustrate the importance of adhesions as affecting the end-result, and show that thoracoscopy with division of adhesions allows 50 per cent. of the treated to return to work as

opposed to 11 per cent. to 33 per cent. if the A.P. is continued in their presence.

This operation is regarded in most clinics as the routine precursor to a possible thoracoplasty in cases with an inefficient A.P. Thoracoscopy can be undertaken on out-patients for direct examination of adhesions, and is to be preferred to radiography, which may fail to give an accurate idea of their type and situation. Selection of those suitable for division is difficult, but the problem is more easily solved as the operator gains experience. Long cords give better results than short bands. Tissues other than pulmonary may have been pulled out of their normal site even into the adhesion itself, and jeopardise the success of the operation, perhaps even the life of the patient. The presence of lung tissue in an adhesion is a grave source of danger, for damage to a diseased area may produce an empyema with pleuro-bronchial fistula. Fatalities have been recorded from cauterisation of the subclavian vein, but dangers from adhesion stumps and intercostal vessels are negligible. Smoke frequently obscures vision, and has to be blown or sucked out of the pleural cavity.

Prof. Jacobæus, Dr. Gullbring (both of Stockholm), and Dr. Gravesen use this thoracoscopy with marked success, and in their hands the operation is delightful to watch. The technique, originated by Prof. Jacobæus, consists in the introduction of a wide trocar and cannula through an intercostal space near the site of an adhesion previously indicated approximately by X rays; the second or third spaces anteriorly or the highest space in the axilla are the usual locations. The tissues are thoroughly novocained, the instrument inserted, and an endoscope passed thereby into the pleural cavity, which can now be inspected for some distance. If, then, it is decided to divide an adhesion a second cannula is passed at the same level about 90 degrees further round the chest. A long, slightly hooked platinum electrode is then applied to the adhesion at a dull red heat, and division is accomplished under view through the endoscope. The cannulæ are similar so that endoscope and electrode are interchangeable, and access to the adhesion can thus be obtained from two points. Some degree of reaction and simple pleural effusion follow in most cases, and a certain amount of subcutaneous emphysema is almost inevitable, but these are of little consequence and A.P. can be resumed in a few days.

Division of Adhesions by Open Operation.

This is occasionally practised by Prof. Denk, of Graz, Austria, on selected cases. He is not a strong supporter of division of adhesions through the thoracoscope on account of the difficulties encountered, the long manipulation, and the risks of opening diseased lung tissue. The open operation can be performed under local anæsthesia with good exposure of the affected region.

Phrenic Evulsion.

Simple division of the phrenic nerve in the neck produces a temporary or partial paralysis of the diaphragm, but permanent paralysis can only be obtained by evulsion of as much of the nerve as is possible, so that the accessory branches (notably that accompanying the nerve to the subclavius) are included in the removal. Evulsion is the most satisfactory method of preventing regeneration of the nerve. The reduction in size of the thoracic cavity produced by elevation of the diaphragmatic dome is most apparent at the base of the lung, so that the lesions which respond best are situated in that region. A certain degree of improvement may accrue to cases with apical infection, but this is naturally dubious; the operation may, however, if performed at a lucky moment in an exudative process, prevent the formation of otherwise inevitable cavities. It does relieve paroxysmal cough of diaphragmatic origin, and give relief to some of the symptoms of pericardial adhesions.

Phrenic evulsion is certainly the most simple means of obtaining permanent reduction in pulmonary volume, and for this reason has been suggested as a termination to protracted A.P. treatment. Some degree of fibrosis and contraction must follow prolonged collapse of a diseased lung, and if cavities had been present before the collapse was undertaken the volume of the lung must have been considerably reduced. The lung re-expands on cessation of the A.P., and becoming adherent to the parietal pleura, tends to resume its original size. Were the chest wall sufficiently elastic to subside correspondingly, the end-result would be satisfactory, but where rigidity rules diaphragmatic ascent following phrenic evulsion will at all events give the lung less room to expand.

The indication and frequency of the operation vary with different authorities. Some use it as a preliminary to complete thoracoplasty with the object of revealing any undetected focus of tuberculous activity by a slight general reaction or of gauging the patient's behaviour towards the more serious experiment. Profs. Key, Denk, and Nyström reserve evulsion for basal lesions, and for a few cases in which thoracoplasty has not been entirely satisfactory. Dr. Gravesen uses it more as a preliminary to a thoracoplasty less extensive than that which most surgeons employ. Its comparative simplicity and ease make it valuable for the aged or debilitated consumptives, though its beneficial effects are small compared with those achieved by plastic operations of wider scope. Scandinavian teachers regard phrenic evulsion as an overrated procedure, with, however, a definite, if small, field of usefulness.

Local anæsthesia is always employed, and a short skin incision is made parallel to the posterior border of the sternomastoid muscle in the lower part of the neck, sometimes for cosmetic reasons, along the upper edge of the clavicle. The platysma and cervical fascia are divided, and the outer border of the scalenus anticus identified. The phrenic is seen running almost vertically downwards below the fascia, and may look surprisingly small. Novocain is injected into the nerve, which is then crushed and divided. The distal portion is seized with forceps and slowly twisted upwards. Deep-seated but not severe pain is felt in the chest, and occasionally a pain is referred to the shoulder. The nerve with its branches gives way or may be divided if about 10 cm. have been avulsed, though the length sometimes obtained reaches 25–30 cm.

Extrapleural "Plugging"—Apicolysis.

If pressure is exerted through the parietal pleura over a cavity in lung tissue it may have the effect of compressing it, so long as it is situated near the surface. Occasionally cavities in the region of the apex persist in spite of radical measures directed towards their collapse. In these cases it may be of advantage to apply extrapleural pressure by means of fat taken from the abdominal wall or paraffin "plugs," but these must be accurately placed if they are to be of any value. In addition it is not practicable to use plugging over a wide area.

The common indication for this type of operation lies in the persistence of an apical cavity following such a procedure as thoracoplasty. Once the cavity is accurately localised and shown to be sufficiently near the surface of the lung access may be gained by resection of the second rib anteriorly (Gravesen), or else by removal of the second, third, or fourth ribs posteriorly (Denk, Clairmont). The intact parietal pleura is then pushed down without injury over the cavity in the lung, and the space thus formed filled with the graft or plug. The superficial layers are carefully approximated.

Criticism is levelled against the operation on the grounds that the graft may not take, or that the plug may slough, and also that there is a considerable risk of infection from the subjacent lung. Rarely the plug has been known to migrate from its site as a result of imperfect fixation, but on the whole the

results in selected cases can be distinctly gratifying. In other parts of the thorax plugging is a satisfactory method of obtaining adhesions as a preliminary to a transpleural operation.

Thoracoplastic Operations.

Several types of operation on the chest wall are in use, but the most common is the paravertebral (Wilms-Sauerbruch) thoracoplasty; the Schede and Estlander have been discarded. Anterior and lateral division of the ribs is employed only in cases where the paravertebral has proved inadequate. Failure of A.P. is the usual indication for the operation. It provides a permanent, rigid collapse and throws the responsibility of ventilation on the opposite lung for all time, and therefore should be reserved until the less drastic measures have been tried and failed. Total thoracoplasty is a severe operation, and should only be performed on patients whose general condition is comparatively satisfactory, and who show no signs of activity in the other lung, otherwise a fatal exacerbation is bound to ensue. About 40 per cent. to 50 per cent. are able to return to work within a year, and with judicious selection the results are really remarkable, since the majority have been operated upon more or less as a last resource when they are complete invalids. In Sweden, especially, thoracoplasty is regarded as a common surgical measure. Operation mortality is from 6 per cent. to 10 per cent. Failures and deaths are due to acute "flares" or gradual spread of the disease in the uncollapsed lung. The risk of right heart embarrassment in right-sided rib collapse has to be kept in mind. Should the thoracoplasty prove inadequate as a collapsing agent—as may happen with a very rigid apical cavity—supplementary rib resection or extrapleural plugging may be called for. Profs. Clairmont (Zürich), Key, Nyström, and Denk use a two-stage thoracoplasty; others prefer a single stage operation, which is bound to produce a severe degree of shock in an already debilitated subject, but which is free from the possibility of faulty rib-fixation which may occur if the interval between the stages is unduly prolonged. Partial upper thoracoplasty, often supplemented by phrenic evulsion, finds favour with Dr. Gravesen, but not with the above-mentioned surgeons.

Anæsthesia is generally local with the patient in a half-sitting position. Gravesen supplements local with light open ether and has no ill-effects therefrom. Speed is important, and if good collapse is to be procured, four to eight inches of the ribs must be removed right up to the level of the transverse processes. Division of the first rib is essential, and if possible an inch should be resected with due regard to the presence of great vessels and nerves. Prof. Key's resections are more extensive than those of other surgeons, and, with the exception of Prof. Nyström, resections are subperiosteal. All insist on the avoidance of any inward thrust or pressure during operation lest the parietal pleura be damaged, and the success of the whole proceeding endangered.

After-treatment is very important. The pain following the operation is severe and must be relieved. Sputum from cavities which are being compressed has to be evacuated, therefore coughing is encouraged, and the posture of the patient best arranged for that purpose. Sleep is necessary, but not at the expense of over-filled cavities. The object of the operation is attained when the mobilised ribs, having gradually fallen in and down towards the vertebral column, remain fixed against it. This may be assisted in the early stage by pressure with bags of shot, and later by some form of elastic belt. The resulting deformity is surprisingly small, and includes but a slight dropping of the shoulder with emphasis of pre-existing hollows. Scapular function is invariably excellent. Most surgeons who have performed this operation are impressed by its efficiency, and comment on the gratitude of patients who have been transferred from a state of chronic ill-health to comparative well-being.

MEDICINE AND THE LAW.

Doctor's Successful Appeal: Alleged Partnership Document.

A MEDICAL practitioner has successfully appealed against conviction in a recent case which, though lacking any special feature of medico-legal concern, is perhaps of general interest as showing how forensic and judicial irregularities can vitiate a criminal trial. The appellant was charged at the London Sessions some time ago with the larcency of stamps. In the course of his defence he had, as the lawyers say, put his character in issue. That is to say, he had claimed that his character was good and had put the fact forward as a reason why the jury should believe him innocent of the charge on which he was being tried. Now if, in defending himself, an accused person makes any positive assertion of his own good character or makes any attack upon the character of witnesses for the prosecution, he is liable to be cross-examined as to his credit. Under this rule the accused doctor was asked questions in cross-examination as to an alleged confession which it was suggested that he had signed, admitting dishonesty, on the dissolution of a medical partnership. He denied having made any such admission. The document was not produced to him though counsel for the prosecution seems to have displayed in his hands a paper which was visible to the jury. The accused man was pressed with a stream of questions about the alleged confession and, when some controversy arose as to whether the cross-examination was proper or improper, the jury—in spite of the protest of counsel for the defence—were asked to retire while legal argument was heard upon the point. This proceeding naturally tended to intensify the atmosphere of suspicion. The Criminal Procedure Act of 1865 lays down that a witness may be cross-examined as to his previous written statements without the writing being shown to him, but that, if it is intended to contradict the witness by the writing, his attention must first be called to the parts of the writing which are to be used against him. Apart from this specific statutory provision, the proceedings at the London Sessions seem to have been conducted with less than the usual fairness. In the upshot the accused man was convicted and was remanded in custody to the following sessions when sentence was passed to the effect that he be bound over for two years. The Court of Criminal Appeal found that three irregularities had occurred. In the first place, in cross-examining the defendant about the alleged document which was not produced, there had been a breach of a statutory rule. Secondly, in allowing the jurors to be sent out of court the tribunal had introduced an element of mystery and suspicion; indeed in the opinion of the Court of Criminal Appeal it is difficult to imagine any occasion when the jury could be asked to leave the box except at the request or with the assent of the defence while statements were made in their absence. Finally the judge at trial had summed up unsatisfactorily to the jury on the issue of criminal intent. For these reasons the appeal succeeded and the conviction was quashed.

It has befallen not a few medical practitioners to be mulcted in substantial damages for some alleged failure or mistake in the professional treatment of a patient. They will observe with envy that distressing mistakes can be made in the administration of justice without any liability being imposed upon judges or prosecuting counsel to pay any compensation whatever.

Suicide at Christian Science Home: Jury's Censure.

An inquest at Ealing on Dec. 14th upon a case of suicide at a Christian Science home at Greenford disclosed a difference of opinion between the jury and the coroner. The deceased woman was not a Christian scientist but was sent to the home

at the instance of a relation who was presumably a Christian scientist and who had supported her financially; he explained to the coroner that he suggested her removal to the home as preferable to having her certified and sent to an asylum. The deceased's daughter stated that her mother had threatened to jump out of the window. When her mother was taken to the home her case was fully explained to the proprietress; it was then said that the windows were fastened. Next morning the deceased asked for some hot milk with her breakfast; as the attendant nurse went downstairs to get it, there was a call that someone was at the window. The dead woman had taken a chair from her bedroom and had climbed from it to the landing window. This happened at 9 A.M.; some 12 hours later she died from her injuries. Dr. M. H. Renall, in his evidence at the inquest, said that death was due to a compressed fracture of the spine. At 9.45 A.M. the daughter telephoned to the home and was told that her mother had passed a restless night and was being kept in bed; the daughter was not told of her mother's injuries till 11 P.M., when her uncle (the relative already mentioned) brought the news of her death. There was evidence that after her fall the deceased did not complain of pain or ask for a doctor, and that her injuries would have been difficult to detect without expert aid. There was also evidence that there had been no previous complaint of the conduct of the home; an attendant had slept in the same room as the deceased. The coroner summed up the case as one which might have happened in any home, and suggested that fault should not be found merely because the accident occurred in a Christian Science home. The jury, nevertheless, in returning a verdict of suicide during temporary insanity, added a rider that they accepted Dr. Renall's evidence that the dead woman must have suffered considerable pain and that they considered the proprietress guilty of neglect (1) for not taking any precaution to protect the deceased from the tendency of which she was made aware; (2) in not immediately calling a doctor; and (3) in omitting to inform the relatives at once of the occurrence. On these grounds they considered the proprietress of the home deserving of censure. The coroner dissociated himself from this verdict. It should be noted that earlier in the proceedings the coroner had asked the proprietress of the home, whether she would have called in a doctor if she had realised that the deceased had been badly hurt. The answer was "Yes." The proprietress had also explained that her husband was a trained medical attendant and had examined the deceased after the accident without finding any serious injury. This was not, therefore, it seems, a Christian Science home where the rules entirely forbade recourse to ordinary medical and surgical treatment. The incident indicates that, if the admission of mentally unstable persons to such homes is to be regarded as an alternative to skilled treatment in institutions provided or supervised under the Lunacy Acts, Parliament may have to pay attention to the consequent dangers.

THE LEAGUE OF MERCY.

THE Prince of Wales, Grand President of the League, took the chair at the thirtieth annual meeting of presidents, which was held at St. James's Palace on Dec. 11th. After reading a congratulatory message from the King, he referred with regret to the death of Lord Lambourne, a most valuable and enthusiastic supporter of the League. The new charter of the League, he said, would give it an opportunity of increasing the numbers of those serving on the council, and he mentioned that the ball held at Grosvenor House in June last had brought in a sum of £1535. Among the splendid contributions to the League during the past year was a donation of £1000 from Lady Melchett, while the gift of a League of Mercy film, the expenses of which had been borne by Mr. John Maxwell and Mr. Joseph Grossman, of the British International Pictures, Elstree, was greatly appreciated where it had been shown. Lady Tree's broadcast appeal had brought in £700.

The Voluntary System.

As a result of recent legislation affecting the health services of the country an attempt was being made by the county councils and county boroughs to bring all hospitals into close touch with one another, and it seemed clear that authorities still recognised the importance of retaining the voluntary system. It would be the privilege of the workers of the League to persuade people to open fresh districts for carrying on the work of the League. Only by this means could the ever-increasing financial demands of modern medicine and surgery be successfully supplied.

Financial Position.

Lord Cornwallis having been appointed chairman in place of the late Lord Lambourne, the Rev. W. H. Hornby Steer, deputy chairman, and the Rev. E. G. Gordon, hon. secretary, the members of the executive council were appointed, and presentations of the Order of Mercy were made by the Prince of Wales. Lord Marshall, the hon. treasurer, then made a statement with regard to the income of the League which had more than equalled last year's total. The income from collections amounted to £12,727, amounts promised to £11,373, while the estimate of amounts to come was £2300, making a grand total of £26,400, compared with £26,143 last year. A special donation of £1000 was given to the Thanksgiving Fund for the King's recovery, the donation to King Edward's Hospital Fund was £17,000, the same as last year, and the grants to extra-metropolitan hospitals amounted to £8399, making a total of £26,399, compared with £25,200 in 1928.

Lord Moynihan, in an address, said he welcomed the opportunity to express on behalf of the medical profession their profound respect and congratulations to the members of the League for all that they had done for the hospitals. There never was a time when hospitals were so well equipped and served by members of his profession, or were held so high in public esteem.

A vote of thanks to the Grand President and the Lady Grand President, to which Princess Mary briefly replied on behalf of her brother and herself, closed the meeting.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

National Health Insurance: Views of the Approved Societies.

THE annual meeting of the Approved Societies' Association of the Irish Free State, held last week, gave an opportunity for consideration and criticism, both of the present working of National Health Insurance and of the changes proposed in the Bill at present before the Irish legislature. The most important decision of the representatives at the meeting was a resolution stating: "That this Association is of opinion that a National Medical Service should be instituted in the Free State." This is the first time that the approved societies have given their support to the demand for a National Medical Service, as distinct from a demand for medical benefits. Hitherto, indeed, some of the societies have insisted that a system of medical benefits, if established, should be administered by the societies. That they have now adopted the policy supported and urged by the medical profession is a matter for satisfaction. The Association, in another resolution, again expresses its dissatisfaction with the present method of providing evidence of sickness, and states that "there is grave and increasing laxity on the part of certain medical certifiers in the issue of certificates of incapacity." The Association asks the National

Health Insurance Commission to take steps to remedy the present state of affairs, and to deal effectively with any medical certifiers found guilty of irregularities in the issue of certificates of incapacity. An increase in the number of medical referees is also demanded. Discontent was expressed with the proposal in the Government Bill to abolish insurance committees. It is clear, however, that in recent years these committees have had few duties to perform; their existence led to unnecessary duplication of work, unnecessary expense, and delay in providing treatment for insured persons. The Association is opposed to the expressed intentions of the Government to introduce legislation to facilitate, if not to compel, amalgamation of the smaller societies. One speaker expressed his opinion that there were only two ways of administering health insurance, either the present system or nationalisation. Another speaker drew attention to the high cost of central administration. Attention was drawn to the fact that the present Government Bill left all the main recommendations of the Report of the Committee of Inquiry untouched, and dealt only with a few of the less important. In contrast with this was the statement made last week in the Senate of the Minister for Local Government and Public Health that the Bill was intended mainly to give effect to the recommendations of the National Health Insurance Commission.

Chair of Surgery in the Royal College of Surgeons.

Mr. Arthur Chance was last week elected to the Chair of Surgery in the School of the Royal College of Surgeons in Ireland, left vacant by the resignation of Mr. A. A. McConnell. Mr. Chance is surgeon to Dr. Steevens Hospital, and Lecturer in Applied Anatomy in the School of Physic, Trinity College. He is a son of the late Sir Arthur Chance.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A Libel Action.

A LIBEL action has arisen in connexion with a so-called "specific" against tuberculosis, which a layman claims to have discovered as a result of treating his own wife. The public press has given extravagant prominence to his claims with the result that patients in sanatoriums have become excited and upset. In one sanatorium the excitement rose to such a pitch that the patients rebelled against orthodox treatment and attempted to induce the medical staff to discontinue all other measures and substitute the new specific. Many half-cured patients have left the sanatoriums, with distressing results. A certain Dr. Nast, a physician of some standing, attempted to serve the public by publishing a pamphlet in which he explained the situation, showing no mercy to the inventor of the remedy. He asserted, and his findings appear to have received independent confirmation, that the "specific" was composed of cigarette paper soaked and crumbled. In the present state of the law Dr. Nast will probably be fined for libel since no one can deny that he called the inventor of the remedy a thief and a quack. The verdict will be pronounced next week, and it is anticipated that Dr. Nast will be let off as lightly as possible. It is also believed that the inventor himself may get into trouble for practising medicine without a qualification, which, I need hardly remind you, is illegal in my country although not in yours.

The Social Insurance Law.

A new social insurance law is to come into force on Feb. 5th and Parliamentary committees are now busy adjusting some of its provisions. Medical men have secured some important amendments of the original draft. As a result of protests fees will still be paid direct to the doctors and will be fixed by them according to their usual scale, the insured patient being awarded a round sum as an indemnity from which to make necessary payments. Free choice of doctor will be allowed, and the doctor will be at liberty to prescribe any drug except certain special ones. The selection of these has not yet been made, but it is probable that an official list of authorised special remedies will be compiled, similar to that in use for medical work under the poor-law. If the proposed law gets through both Chambers in its present revised form it will involve but little change in current medical practice.

A New Faculty of Medicine at Marseilles.

Marseilles is the second largest town in France, with a population of about a million. Up to now it has had only a "school" of medicine; that is, students could only take part of their course there and had to go for nearly all their examinations to another town. Generally they went to Lyon or Montpellier—where there are faculties of medicine, though Montpellier has hardly 100,000 inhabitants. Jealousy between the neighbouring towns has hitherto prevented the development of the medical school of Marseilles, but since at such a big port an extraordinary variety of diseases may be observed it is satisfactory to learn that university status has now been achieved. The faculty at Marseilles will develop the department of tropical medicine and pathology, and it is hoped that in the course of a few years it will become an important centre for teaching and research.

Stationary Cars in Paris.

An automobile club of doctors has been started in Paris under the presidency of Prof. J. L. Faure. The first object of the club is to settle with the prefect of police the question of leaving cars in streets. A half-hour limit is shortly to be enforced in the main streets of Paris, and the members of the club hope to secure exceptional treatment for cars belonging to medical men.

Dr. Charles Nicolle, head of the Institut Pasteur of Tunis and winner of a Nobel Prize for Medicine, has been made a member of the Académie des Sciences, of which he was already correspondent. Prof. Lépine, Dean of the Faculty of Lyon and member of the Académie de Medécine, has been elected corresponding member of the "Académie des sciences morales et politiques" in the section of philosophy. He is professor of clinical neurology and psychiatry. Prof. Gosset will be this year's chairman of the National Society of Surgery. Dr. Lhermitte will be the chairman of the Society of Neurology, and Mr. Tissier will preside over the Society of Forensic Medicine, which has a mixed membership of doctors and lawyers.

MILLER GENERAL HOSPITAL, GREENWICH.—At the annual meeting of this hospital last week it was stated by Lord Queenborough, the President, that the response to a recent appeal had been only five shillings. The income has gone up by £5000, but the expenditure has increased to an even greater extent, and there is a net deficit on the last two years of £4350. During the year patients' payments amounted to £2707.

THANK-OFFERING FUND.—This Fund, which has now been closed, amounts to £689,597. Out of the money subscribed for the purchase of radium £100,000 has already been paid to the National Radium Trustees to enable them to claim the equivalent Government grant and a further £50,000 has yet to be handed over. "Audax's" donation of £105,000 to King Edward's Fund is being invested and the income will be used to swell the amount available for annual distribution. A balance of £37,000 subscribed for radium will be given to the King's Fund for the purchase of radium to be lent to the London hospitals. The King's Fund will make a special distribution in aid of extensions of and improvements to hospitals. The donations received before August 1st earmarked for individual hospitals have been paid over, and the balance is now being distributed. The number of separate distributions has amounted to nearly 500.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1928 statistics of four large towns, which suffer excessively from atmospheric pollution, and of two smaller towns more favoured in this respect. The variations in the rates of young child mortality are striking.

Name of town and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Manchester .. (767,530)	16·8	12·9	1·29	1·44	2·6	1·5	91/34	44	4·1
Newcastle-upon-Tyne (281,500)	19·2	13·1	1·32	1·54	1·8	1·9	83/38	44	5·0
Salford .. .. (241,500)	16·9	13·3	1·42	1·32	3·2	1·3	106/—	48	4·2
St. Helens .. (110,500)	21·8	12·0	0·95	1·09	2·5	1·6	98/48	50	4·6
Poole .. .. (52,940)	17·3	11·9*	0·77	1·42	1·8	1·5	50/30	24	8·7
Colchester .. (44,880)	15·8	10·5	0·69	1·80	0·9	1·7	42/—	17	1·3

Relation of stillbirths to live births: Manchester 6·2 per cent., Newcastle 6·1 per cent., Salford (those notified) 5·0 per cent., St. Helens (notified) 4·4 per cent., Poole, 2·7 per cent., and Colchester 3·9 per cent. * Standardised rate 10·0.

Manchester.

Dr. R. Veitch Clark reports that the infant mortality-rate was five higher than in 1927 and four higher than in 1926. The increase was chiefly due to the later persistence of diarrhœal and wasting diseases during the fourth quarter and to the prevalence of whooping-cough, and a definite outbreak of acute respiratory catarrh in the city during the same period.

A special report on diphtheria immunisation made to the city council in June shows that during the ten years 1917–26 there was a yearly average of 758 cases of diphtheria with 69 deaths, and that half the deaths occurred in children under 5 years and 96 per cent. of the deaths in children under 15 years. The case fatality of Manchester children who have contracted diphtheria during this period has been 10·5 per cent. The cost to the municipality of providing treatment for this disease is estimated as being nearly £14,000 for 1926 and £9000 as an annual average. Examples are given to illustrate the benefits of immunisation schemes in other places, and it is mentioned that in Monsall Hospital no fully immunised member of the nursing staff has developed diphtheria since immunisation was adopted in 1925. The city council, as the result of the report, approved a scheme for the free provision of the necessary material for immunisation to medical practitioners and hospitals and for the carrying out of immunisation through the maternity and child welfare centres, school clinics, &c. Towards the end of the year a beginning was made and 490 immunisations were carried out at the child welfare centres.

The cases of encephalitis which came to light during the year numbered 50, of which 17 began to be ill in or prior to 1926, 11 in 1927, and 22 in 1928. The deaths caused by this disease numbered 41, 17 being those of persons notified in previous years. Children suffering from post-encephalitis are fairly well provided for by the guardians in Swinton Home. Adults who are bedridden and only require nursing care are provided for in the poor-law hospitals, but there remains a group of patients from the age of 14 years upwards, but mainly adolescents, for whom at the present time there is no suitable provision. This group largely suffer from moral defects or milder degrees of parkinsonism, and a scheme for their benefit is being considered by a joint committee of the health and education committees and the guardians.

The registration of stillbirths came into force on Jan. 1st, 1928. The principal causes of stillbirth in 139 cases investigated in the practice of midwives were: albuminuria of pregnancy 23, breech presentations, 24, antepartum hæmorrhage 11, and twin pregnancies 8. The attendances at the antenatal clinics showed an increase from 2746 in 1927 to 4800 in 1928. The ten clinics were attended by 1711 new cases, while the total births were 12,909. The cases of puerperal fever and pyrexia which ended fatally numbered 29, of which 8 were cases of abortion and 4 came from outside districts. The particulars are given of 45 other maternal deaths investigated, and if these are added to the 25 deaths from sepsis the maternal mortality from childbirth becomes 5·4. The admissions to the Monsall Hospital puerperal fever ward numbered 154, of which 21 ended fatally, but 6 died within 48 hours of admission. Dr. D. S. Sutherland states that septicæmia has not been found difficult to treat provided the focus of infection can be successfully dealt with by repeated glycerin-iodine intra-uterine injections. The intramuscular injection of metarsenobillon has given promising results when the septicæmia is treated early, and it is hoped to give in the 1929 report sufficient evidence as to its efficacy or otherwise. Dr. Clark reports that handicraft work has been developed at Baguley Sanatorium, and that good progress has been made in the building of the new children's sanatorium at Abergele. An increase is noted by Dr. D. P. Sutherland (tuberculosis officer) of the notifications of pulmonary tuberculosis between the ages of 25 and 34 in both males and females, and of the deaths at the same age-period only among the males.

Artificial light treatment is thought to be an advantage to the child in-patients at Abergele, but Dr. Sutherland is much more doubtful as to the benefits of light treatment given to out-patients. For lupus it is undoubtedly a benefit; but in other varieties of non-pulmonary tuberculosis the results are often indifferent. On the other hand, the use of artificial light for the treatment of children selected from the different maternity and child welfare centres and suffering from rickets, malnutrition, and debility following illness, is thought to give good results when the attendances are regular. Benefit is also claimed in the case of children suffering from adenitis, asthma, and nervousness, and of nursing mothers with failing lactation.

There were several introductions of small-pox by tramps and 68 cases in all with no death. Eleven cases of bacillary and two of amœbic dysentery were notified. The Flexner bacillus was responsible for seven cases and the Sonne bacillus for four. A boy of 3 years died from Sonne dysentery. Of the amœbic cases, both contracted in Mesopotamia during the war, one, aged 48, died. Early in the year there was an outbreak of ergot poisoning in North Manchester. The first cases occurred in private practice and one of the hospitals. The number of persons affected is unknown and it is not mentioned how severe the cases were. The use of the ergot-infected rye was prohibited and its sources investigated. The Ministry of Health has continued the inquiry and taken action to prevent the recurrence of the trouble. The new cases of syphilis and gonorrhœa treated were about the same as in the previous year. About one-quarter of those treated failed to complete the treatment up to the final tests. The use of antitoxin for the treatment of scarlet fever is being extended at Monsall, and it is estimated that the duration of stay in hospital can be thereby safely shortened by about seven days. Hitherto the serum has been injected intramuscularly. It is also being used for the immunisation of diphtheria cases admitted. The bed-isolation ward at this hospital has proved extremely useful, 317 cases of various illnesses

having been admitted without any case of cross infection. Pemphigus neonatorum is notifiable in Manchester. Among the 106 cases reported there were 58 of infants under 11 days old and the total deaths numbered four, two being in institutions. Except for one outbreak of 22 mild cases in the same practice, the majority were isolated cases.

The city farms accommodate 951 cows, and amongst these one tuberculous udder and two cases of pulmonary tuberculosis (not advanced) were found. The percentage of tuberculous country milks was unusually high—viz., 694 samples with 122 tuberculous, or 17·6 per cent. Of 102 Derbyshire samples, 24·5 per cent. were tuberculous; of 348 Cheshire samples, 18·1 per cent.; of 101 Staffordshire samples, 16·8 per cent.; and of 110 Lancashire, 10·0 per cent. The regional smoke abatement committee has interested itself especially in standards for smoke emissions, by-laws, and the provision of solid smokeless fuel. The Manchester Committee on Cancer has attained some success in discovering a method for producing a purified oil which is non-carcinogenic and therefore safe for industrial use, whilst its lubricating power is unimpaired.

Newcastle-upon-Tyne.

Dr. Harold Kerr reports that in spite of trade depression, increased unemployment, and much demand for assistance from the guardians, the infant mortality and tuberculosis death-rates were lower than ever before—a tribute to the efficiency of the relief organisations. The hours of sunshine recorded at Armstrong College were 1169 as compared with 899 in the previous year. The city only has three-quarters of the sunshine available in the neighbourhood. A comparison shows that the deposit from the atmosphere in the residential district of Westgate Hill contains 3 per cent. of tarry matter and 50 per cent. of ash, whilst the deposit at the quayside contains 2 per cent. of tar and 66 per cent. of ash, indicating more complete combustion in the industrial area. Dr. Kerr deplores the high cost of the smokeless fuels on the market, and evidently Newcastle lacks the advantage of the dry coke from vertical retorts available in Salford. The behaviour of the corporation chimneys has improved, and a satisfactory smoke prevention apparatus has been installed at the new baths. The tramways chimney has substituted the emission of grit for that of dense volumes of black smoke. The attempt to form a regional smoke abatement committee has temporarily failed owing to apathy and indifference or to the jealousies of neighbours. There were 76 cases of small-pox, all of the mild type, though two of the male patients, aged 66 and 69, died from cancer.

During the year bacillary dysentery was recognised in the city. The first indication of its presence was the occurrence of five mild cases in a house in Cowgate during March. Prior to bacteriological examination food poisoning was suspected. In April two sudden deaths of children were investigated by the coroner and found to be due to "bacillary dysentery." The medical practitioners of the city were notified. In all 66 cases, six of which came from outside, were brought to notice and the majority were treated in the city hospital. There were ten deaths, two at the age-period 1 to 5, seven at the age-period 5 to 15, and one over 45. Eight of the deaths were of females, two of males. The outbreak was peculiar in that five types of the Flexner bacillus, the Sonne bacillus, and a newly isolated germ (the "Newcastle bacillus") appeared to be the causal organisms. An unusual occurrence was an outbreak of poisoning among the employees of a firm. The management provided lemonade during the hot weather which was mixed in enamelled buckets. The illness was caused by tartaric acid releasing antimony compounds from the enamel which was not of a high quality. Fifty-six patients were removed to the Royal Infirmary, but most of them were able to resume work after some hours and none of them showed after-effects.

The duration of stay in hospital for scarlet fever has been considerably shortened by the use of anti-toxin and also by the work of the oto-rhinologist. The average stay for scarlet fever patients was 29·3 days, and the return case-rate 1·3 per cent. Since protective inoculation was adopted for scarlet fever, diphtheria, and enteric fever there has been no case of any of these diseases among the hospital staff. Newcastle has generally had a smaller maternal mortality than the rest of the country, but during 1928 the rate jumped up to 4·97 and the death-rate for puerperal sepsis (1·66) was more than double that of the previous three years. About a quarter of the mothers attend the antenatal clinics. Dr. Kerr suggests that a consultant's opinion ought to be made available for confinements generally and not only in cases of puerperal fever, and that sufficient use is not made of the sterilised outfits on sale at the antenatal centres. Of 376 samples of milk examined for tubercle 3·7 per cent. were positive, but the endeavour to track out the infecting animals at the 11 Northumberland farms implicated was not very successful. The condition of the water of the swimming baths provided with a continuous system of filtration and aeration is much superior to that of the baths the water of which is changed twice or thrice a week.

The chief sanitary inspector, Mr. C. Raimes, describes the efforts made to effect a reduction in the number of van dwellers and the difficulties created by the lack of low-rented houses. For example, in the hearing of an application for ejectment orders, the rent of the tenants was 4*s*. per week and the alternative accommodation offered 11*s*. to 12*s*. a week.

Salford.

The headquarters of the public health department, 131 to 155, Regent-road, with some of the ground floor shop windows used as health exhibits, forms the frontispiece of Dr. H. Osborne's report. In this block are housed the public health and school staff, the public analyst, the bacteriologist, the tuberculosis dispensary, the new municipal V.D. clinic, and the new artificial light clinic. Up to March 31st, 1928, the V.D. clinic was conducted at the out-patients' department of the Salford Royal Hospital. On April 1st the work was transferred to the municipal clinic, and the first nine months' working have falsified all the theoretical objections to an ad hoc clinic. The premises have been specially equipped; there is a whole-time staff; the clinics are held more frequently and at convenient hours, and intermediate treatment is available daily for both sexes for a total period of 71½ hours weekly. As a result there has been a very large increase in the attendances since the transfer, and steps are being taken to still further perfect the methods adopted. Two new maternity and child welfare centres are being established, and the decision to have an out-patient light centre is based upon the excellent results obtained at the municipal babies' hospital.

Two health weeks were held from Dec. 2nd to 15th, and a health exhibition which attracted 30,000 visitors. A feature of the exhibition was a demonstration of "vertical" coke and other smokeless fuels burning in fire-brick grates. In order to remove doubt in the public mind as to whether Salford vertical coke is suitable for heating an oven Dr. Osborne has carried out experiments which demonstrate that this fuel is entirely satisfactory for the purpose. He points out that the supply of such fuels is still very limited but is certain to increase as the public demand grows. He would like all gas undertakings to consider the vertical retort when they are making new installations, and he makes a wide distinction between dry gas coke and the ordinary wet gas coke. He points out that the deposit from the atmosphere contains much more tar in Salford than it does in Birmingham, Glasgow, and Leeds, as one would expect in "a working-class dormitory city packed with small dwellings having open ranges burning bituminous coal." There are only 100 cows kept in the city and amongst these the veterinary inspector found two cows with clinical tuberculosis and one with tuberculosis of the udder.

Of 445 "outside" milks examined 37 were tuberculous. Cheshire milks always come out worse than Lancashire. Of the 37 incriminated farms, 19 had one cow with tubercle of the udder, 7 had two, 1 had three, and in the remainder no cows were found affected. In several of the latter cases the owner admitted that a cow which was wrong in the udder had been disposed of after the sample had been taken.

The public analyst, Mr. H. H. Bagnall, describes the shortcomings of the new Food and Drugs Consolidation Act which came into force on Jan. 1st, 1929. He also refers to an unusual feature in the milk samples taken during the first two quarters of 1928. Many samples from many farms were low in non-fatty solids, and this phenomenon followed on an extraordinary rise in the percentage of fat during the last quarter of 1927 which continued during the first quarter of 1928. Two noteworthy successful prosecutions are described: one for selling factory-made "lemon cheese" (not made from butter, sugar, eggs, lemon juice, and rind) as "home-made"; and the other for the sale of cod-liver oil tablets from which vitamins A and D were entirely absent.

St. Helens.

Dr. F. Hauxwell's report conveys the impression of a very efficient public health medical service working for the individual. He describes the year's work of a real antenatal clinic, not one of the non-medical or social type, but conducted by a doctor with a view to detecting abnormalities and making appropriate arrangements for a safe confinement. This scheme has been helped by the provision of the new maternity block at St. Helens Hospital and will be still further strengthened by the proposed municipal hospital for 15 maternity cases and 24 children. The orthopædic scheme has proved successful in getting in touch with cripples at an early stage. During 1928 the orthopædic surgeon, Mr. T. P. McMurray, had under his charge 49 cases of tuberculosis, 165 children under 5 and 165 non-tuberculous school-children. A considerable number of these children received in-patient treatment in the Liverpool and Wirral hospitals. Dr. Hauxwell notes that after the post-war years there was a distinct fall in the new cases of venereal disease attending the clinic, but that since 1922 there has been a steady increase up to 1928, most marked in gonorrhœa. Increased popularity of the clinic would hardly account for the figures being nearly doubled in six years. Cases, however, attend earlier and more regularly than formerly. The investigation of maternal deaths shows that if all the deaths associated with child-birth are reckoned with the maternal death-rate becomes 7·1 per 1000 live births instead of 4·6.

During the months February to May milk samples were unusually poor. Of 141 samples only 94 were above the low standard of the regulations. Poor quality of hay was alleged as a cause and the quality improved when the cattle were turned out to pasture. The chief industries of St. Helens are coal-mining and glass-making, and a table shows that St. Helens compares unfavourably with London, Birmingham, Cardiff, Huddersfield, Rotherham, and Wakefield as regards the amount of dirt deposited from the atmosphere. Only one of the stations in Newcastle-upon-Tyne is shown as giving a worse result. Dr. Hauxwell has many complaints to make with regard to environmental hygiene. The rivers and streams are seriously polluted with sewage; over 1200 privy middens and pail-closets need conversion; the refuse tip causes an unnecessary nuisance; and there is urgent need for the provision of smaller and cheaper houses in order to cope with overcrowding.

Poole.

Dr. R. J. Maule Horne reports that owing to the erection of new houses in outlying districts cesspools have increased from 490 in 1926 to 783 in 1928. It is hoped that 325 of these houses will be caught up by sewer extension during 1929. Endeavours are being made to select a better refuse disposal system than the existing tips. The open-air tidal swimming bath on the foreshore is well used during the summer, and a new sea-water swimming enclosure is to be provided in the public park. Mosquito control, by spraying the lakes and ponds with paraffin, has been continued. Oysters dredged from the harbour have to be relaid for 14 days in the Shipstal beds and the bacterial tests periodically carried out show the dependability of the relaying process. During 1927–28 50,000 oysters were dredged, but owing to two cold spatting seasons the number has now to be reduced to 25,000. Dr. Horne conducts the antenatal clinics, which are closely coördinated with the maternity department of Cornelia Hospital, where another antenatal clinic is held for the mothers, who await admission to the wards, by the obstetrician who will attend them.

Colchester.

Dr. W. F. Corfield shows how the deaths of children under 5 have decreased in recent years. During 1928 17 of these children were nursed by the district association when ill. An antenatal clinic was started in March and Dr. Grace G. Griffith, of Bures, was appointed (part time) medical officer in charge. For the first nine months the new patients attending numbered 71. The Ministry did not approve the two houses suggested for conversion into a maternity home and it seems probable that this long-delayed scheme will await the imminent changes in the poor-law. The orthopædic clinic conducted by Mr. B. Whitchurch Howell dealt with an increased number of cases, and many deformities are being treated before they have had time to do serious damage. As in the case of Poole building in outlying districts has caused an increase in the number of cesspools—and in addition of private wells. In August there was an outbreak of enteric fever in a mental hospital. Full investigation threw suspicion on the food, and the cause was considered to be infection by a member of the kitchen staff, who had, a short time previously, suffered from an indefinite attack of illness. None of the staff was affected, but there were 81 cases among the patients with 28 deaths.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 7TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 252 (last week 198); scarlet fever, 3388; diphtheria, 1743; enteric fever, 54; pneumonia, 1253; puerperal fever, 57; puerperal pyrexia, 109; cerebro-spinal fever, 7; acute poliomyelitis, 9; acute polio-encephalitis, 2; encephalitis lethargica, 19; continued fever, 1; dysentery, 10; ophthalmia neonatorum, 95. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Dec. 10th–11th was as follows: Small-pox, 353 under treatment, 15 under observation (last week 308 and 10 respectively); scarlet fever, 2745; diphtheria, 2698; enteric fever, 70; measles, 501; whooping-cough, 123; puerperal fever, 23 (plus 12 babies); encephalitis lethargica, 123; poliomyelitis, 6; "other diseases" 12. At St. Margaret's Hospital there were 12 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London there was no death from small-pox, 2 (1) from enteric fever, 27 (10) from measles, 10 (4) from scarlet fever, 19 (2) from whooping-cough, 43 (5) from diphtheria, 45 (10) from diarrhœa and enteritis under two years, and 53 (15) from influenza. The figures in parentheses are those for London itself.

The death from enteric fever outside London was reported from Hull. The highest figures for diarrhœa were from Manchester 5, Liverpool 4. Measles claimed 4 deaths at Wigan, whooping-cough 3 deaths at Liverpool, diphtheria 5 deaths at Liverpool, and 3 at Merthyr Tydfil.

The number of stillbirths notified during the week was 244 (corresponding to a rate of 40 per 1000 births), including 39 in London.

Correspondence.

"Audi alteram partem."

TREATMENT OF CAVERNOUS NÆVI.

To the Editor of THE LANCET.

SIR,—On p. 1251 of your last issue Dr. G. B. Dowling advocates the treatment of cavernous nævi by injections of quinine and urethane. In the course of his remarks he says that surgical excision "is undesirable in an infant and in some situations impossible." I am not here concerned with the proposed substitute, but it is surely time that the profession as a whole realised that the excision of a nævus is one of the most satisfactory little operations in the surgery of childhood. Time is a most important factor. Nævi which at birth are a few millimetres in diameter often grow at an appalling rate. Excision becomes impossible and the electro-cautery is quite properly used. This is often successful, but a matter of moments has become a matter of months and the hapless child is branded with a pock-marked area of lepra-like integument. The early doors of a children's hospital are besieged by pathetic sufferers from spina bifida, syndactyly, and hypospadias, while lanugo yet lingers on their brows—but the cavernous nævi stay at home and wait for the warmer weather.

Admittedly, excision of nævi in some situations is impossible from the beginning, but the impossibility is as often caused by procrastination as by position. If we must have a slogan let it be "a nævus excised is a tragedy averted"—and the earlier the easier.

I am, Sir, yours faithfully,

Wimpole-street, W., Dec. 16th, 1929. ERIC I. LLOYD.

IRRADIATED MILK *v.* COD-LIVER OIL FOR RICKETS.

To the Editor of THE LANCET.

SIR,—May I reply to Dr. Bodman's letter in your issue of Dec. 7th? My opinion of the very low antirachitic potency of non-irradiated milk is based on the examination of 11 different samples, of which five were bought in the open market and six were sent from the makers of the irradiated milks for comparison. The method of testing for vitamin D adopted in these laboratories is Mr. Collum's "line" test, a method frequently described in the scientific literature on the subject and adopted by most laboratories in Europe and America. By assaying the antirachitic potency of any substance in terms of our standard preparation of irradiated ergosterol (described in the *Quarterly Journal of Pharmacy*, 1928, i., 27) it has been possible to collect and compare figures for the antirachitic activity of substances over a period of nearly three years.

The examination of 11 samples of fresh milk showed negligible quantities of vitamin D in seven samples, 0·1 unit per gramme in one sample, and 0·2 units per gramme in three samples. The vitamin D potency of non-irradiated milk appears to be particularly low when it is compared with the vitamin A potency, a comparison which may be drawn in two ways. When rats have ceased to grow on a diet deficient in vitamin A which, according to Mellanby, is a direct result of the development of various pathological conditions, 1 c.cm. of milk given daily will almost invariably cure these disorders and growth will be resumed. On the other hand, when rats have developed a severe degree of rickets on a rachitogenic diet (deficient in vitamin D and with a Ca : P ratio of 4 : 1), 1 c.cm. of milk daily gives no indication of healing; in fact one sample of milk produced no healing in a dose of 20 c.cm. daily. While the different conditions of the rats given on the one hand no vitamin A, and on the other no vitamin D cannot be considered exactly similar, yet they afford a useful basis for a practical comparison of the respective amounts of vitamins A and D in milk. The comparison may also be drawn by reference to the vitamin content of cod-liver oil. A fairly good sample of cod-liver oil will cure the disorders resultant on a deficiency of vitamin A and promote good growth by means of a dose of 0·01 gramme daily. The same dose of cod-liver oil will completely cure a very severe degree of rickets. Thus it may be said that an average sample of milk has about one-hundredth of the vitamin A content of our average sample of cod-liver oil. It has, at the most, one five-hundredth of the vitamin D content; one sample examined had less than one ten-thousandth.

In Sherman and Stiebeling's experiments I would point out that the inclusion of 5–10 per cent. of dried milk in the diet of rats on whom the experiment was performed would ensure that the rat ate about 0·5–1·0 gramme dried milk per day. Assuming 12½ per cent. dry matter in milk, this would be equivalent to 4–8 grammes fresh milk per day, which would doubtless be sufficient of *some* samples of milk to afford protection from rickets and promote growth in rats, especially when the basal diet is, as stated, adequate in all other respects including mineral content. These results are not "quite opposed to" our own, as Dr. Bodman thinks. They confirm them by emphasising the large amount of milk necessary to protect rats from rickets even when the rest of the diet is as nearly perfect as present knowledge can make it.—I am, Sir, yours faithfully,

KATHARINE H. COWARD,
Nutrition Department.
Pharmaceutical Society of Great Britain, Pharmacological Laboratory, Bloomsbury-square, London, W.C., Dec. 16th, 1929.

ENCEPHALOMYELITIS FOLLOWING VACCINATION.

To the Editor of THE LANCET.

SIR,—Dr. C. D. Coyle and Dr. E. W. Hurst close their interesting article on this subject in your last issue with the words: "Any investigation must . . . aim at discovering a common factor responsible for the production of identical histological lesions in a number of very different conditions." May I suggest that if these conditions are regarded ab initio as "very different," and if it be assumed that the common factor is to be "discovered" rather than demonstrated, there is some danger of a block on the line of progress.

The conditions actually mentioned are small-pox, vaccinia, measles, and after antirabic treatment. All these are occasionally associated with encephalomyelitis. We may add to the list chicken-pox and rabies as well as those idiopathic examples which may or may not be associated in human beings with influenza and in animals with distemper. But however we construct our preliminary group it becomes clear that there is a type of reaction to infection of which encephalomyelitis is one of the characteristics. We are not unacquainted with types of reaction in a broad sense. Thus the lesion which occurs after the lodgment of germs of the tuberculosis-streptothrix order is of a very different character to that associated with the genus streptococcus. Each is different again to that caused by the many varieties allied to *B. typhosus*, and typhosus infections are not easily confused with mycotic diseases. Bearing such broad groups in mind, it is interesting to observe that many of the encephalitic group have been shown to be associated with diseases caused by a virus and that none of the group has been shown to be caused by any other sort of organism.

It is possible that virus infection is the desired "common factor" underlying these "very different conditions." If that were so, we might hope to be able to identify some general type of reaction analogous to the general type favoured by other groups of infective agents. Of this general type encephalitis of occasional occurrence would be one

feature. Another might be the tendency to epidermal vesicular lesions. A third might be the type of response identified in the tissues by the microscope—i.e., the response by lymphocytic proliferation rather than the evidence of tissue destruction which is also seen.

It is not for the writer of this letter—a general practitioner—to define the group with exactitude. But it sometimes happens that those who have had no opportunity to make a close study of the trees happen upon a vague but useful idea of the general size and shape of the wood. It is quite likely that viruses differ among themselves and that only certain of them react as members of the encephalitic group. But if we concentrate on those different conditions mentioned and seek to elucidate all the points which they have in common, we may well find a group in which occasional encephalitis will be no more surprising than is an occasional bone abscess in typhoid. We might then cease searching for the germ of encephalitis and concentrate on those factors which make every virus in the group potentially encephalitic. And although micropathology will doubtless have its share in the quest, it will perhaps not enjoy the position of almost exclusive pre-eminence which it has attained to-day. It has reached this position by the skill of its devotees, and the fault (if there be any) is that of the general pathologists, the students of morbid physiology, who have been too content to view this subject through the microscope.

At least, so the writer feels and signs his name, with some trepidation,

Yours faithfully,

Sevenoaks, Kent, Dec. 15th, 1929. GORDON WARD.

CLINICS FOR RHEUMATIC CHILDREN.

To the Editor of THE LANCET.

SIR,—Dr. Burnet's letter raises points of first importance. Its main object is to urge the development of special clinics for rheumatic children and there appear to be several reasons why we should hesitate to recommend the formation of such clinics all over the country.

In the first place, rheumatism of childhood in its different aspects and degrees of severity is so widely spread and the numbers involved are so great that it would probably mean the attendance of about 20 per cent. of the elementary school-children. If the chief object of such clinics would be to prevent rheumatism in its more severe forms then unless the potentially rheumatic or so-called "pre-rheumatic" child is to be included in the attendance at these clinics, the clinics from the point of view of prevention would be useless and a waste of money. Apart from the use of salicylates in some of the active cases and provision of rest for the heart cases there is hardly anything that can be offered in the way of treatment. The rheumatic problem is a social one and is entirely one of prevention, and it appears to me that we can no more prevent rheumatism by rheumatic clinics than we can prevent a wet day by putting up an umbrella.

I would, however, be in agreement with Dr. Burnet in the development of investigation centres which would have as their main object the intimate study of the disease in all its aspects, and with him I would urge the provision of more beds for the heart cases in all the large centres.

Again it would be a mistake to divert active rheumatic cases from the private doctor who is so closely in touch with the home conditions or from the hospital clinics who have for so many years been engaged in the important work of investigation and the teaching of the medical student. A great part of our knowledge of child rheumatism has been won by the hospital physician, and the names of Cheadle, Barlow, Lees, Poynton, Carey Coombs, and Reginald Miller should be remembered in connexion with this. Hospital teaching and investigation have already suffered much by the loss of tubercular cases, and it would be unwise to allow this to happen in the case of the rheumatic affection.

It appears to me that as regards the prevention of this appalling disease the public health services, and more especially the welfare centres and school medical services, have a great opportunity. Dr. Burnet is, I think, rather too severe in his criticism of the medical officers staffing these services. Agreed that many of the doctors are at present accepted for service without adequate children's experience and that their time is largely taken up by that soul-destroying business of amassing statistics for annual reports, yet there is undoubtedly in being a body of men and women eager, I feel sure, to tackle this urgent problem if only their administrative heads will organise a campaign. What can be done? In the first place, prevention of rheumatism must start with the "well" child of one year and must continue up to the last day of the school period. The welfare centres and the school services must therefore at once be linked up under one administrative head, and I suggest that through their combined agency a really comprehensive campaign should be instituted with regard to the efficient feeding of the child. The medical officer must be prepared to pick out all those children who are potentially rheumatic and not merely those who are frankly rheumatic, and these children should either be fed at school or steps taken to insure that they are efficiently fed at home. Those children with frank, active rheumatism should be brought in immediate touch with the private doctor or hospital clinic, and here again a far closer coöperation must be instituted between the different medical agencies than at present exists. The development of the nursery school and the open-air school must also form an important part of the measures to be undertaken with regard to the disease.

There are those who still believe that the beginning and end of the rheumatic problem lies in the early removal of tonsils and adenoids. I fancy, however, that the number of such is getting less, although none of us will deny that the healthy nasopharynx is an important factor in the health and resistance of the child, and it would appear that the present school medical service is in a specially favourable position to attend to this important, but not the most important, factor in the prevention of the rheumatism of childhood. I hope, therefore, that the profession will whole-heartedly support and encourage the further development and work of the welfare centres and school medical service, for in their hands lies the future progress in the prevention of rheumatism with its resultant heart disease.

I am, Sir, yours faithfully,

C. WILFRED VINING, M.D., F.R.C.P.

Leeds, Dec. 7th, 1929.

LIVER TREATMENT IN ESSENTIAL THROMBOPENIA.

To the Editor of THE LANCET.

SIR,—In a paper on the Clinical Significance of the Blood-platelets which Dr. R. G. Bannerman and I contributed to your series of Clinical Interpretation of Aids to Diagnosis (THE LANCET, 1929, i., 1048) we gave reasons for thinking that the liver treatment of pernicious anæmia is likely to be of therapeutic value in other conditions in which there is a primary thrombopenia. A case of essential thrombopenia which has been so treated, and apparently with success, has been published by Dr. S. A. Holboll in *Hospitalstidende* for August 8th (p. 841). As the Danish journal is unlikely to be accessible to many of your readers I venture to draw their attention through your columns to this paper which seems to justify the application of liver treatment to cases of essential thrombopenia before the alternative and more heroic treatment by splenectomy is adopted.

I am, Sir, yours faithfully,

W. CRAMER.

Imperial Cancer Research Fund, Queen-square, W.C., Dec. 11th, 1929.

MALIGNANT GROWTH AND PELLAGRA.

To the Editor of THE LANCET.

SIR,—Dr. Trevor Heaton describes in your issue of Oct. 12th (p. 762) how the growth of malignant tumours in rats may be arrested by the injection in large doses of certain extracts from malt. He suggests that this effect is due to a "growth inhibiting factor" which is present in the extracts. He states that "after the growth of their tumours had been arrested the animals usually died." This appears to me to be a very important point in that it shows that the vitalities of the tumours and the tissues of the rats were more or less equally affected by the treatment. It is well known that the degree of growth of malignant tumours often varies with the general health and vitality of their hosts. They grow more rapidly in young and vigorous patients than in the old and decrepit; and occasionally carcinomas cease to grow and may even disappear in the case of very senile patients.

Many years ago when I was resident surgeon to the hospital in St. Lucia, British West Indies, a mulatto woman consulted me for a tumour of the breast, I diagnosed it as a scirrhus carcinoma and urged her to be admitted to hospital for operation; she refused. Several months later she was brought to hospital suffering with pellagra, and then I was unable to find any signs of the tumour in the breast. The woman died and a post-mortem examination was made and an examination of the breast and axillary glands showed only fibrous changes and no signs of the tumour. The pathology of pellagra may be summed up as a cellular degeneration affecting all the tissues of the body; so that there is general emaciation and profound wasting of the epithelial tissues and the visceral organs. Therefore it would not be astonishing if the general cellular degeneration also affected carcinomatous tissue. Carcinoma of the buccal mucosa (betel chewer's cancer) is common in Ceylon; and several years ago I treated a few patients having inoperable growths with large doses of extracts of carcinomatous tissues which had been removed at operation from other patients. These extracts produced much debility and increased the wasting in the patient; and in all cases the carcinomatous masses diminished in size. Only two patients could be induced to continue the treatment and in both cases the tumours disappeared leaving large excavations in the cheeks. These patients were shown before the Ceylon branch of the British Medical Association. They were in a very low state of health, but it was hoped that they would recover after the cessation of treatment. But both of them died of progressive wasting and debility in a few weeks. A post-mortem examination was obtained on one of them, and no remnants of carcinomatous tissue could be found either macroscopically or microscopically.

The point which I wish to bring out is that malignant growths (especially those of epithelial origin) are almost unique in pathological processes in that they are more or less profoundly affected by certain types of generalised cellular degeneration taking place in their hosts. This degeneration may be the result of the injection of foreign substances, or the result of such a disease as pellagra or due to senility. This is not only of ætiological significance, but may be of importance in the treatment of patients. The result of Dr. Heaton's treatment of rats harbouring Jansen's sarcoma was the same as in the case of the two patients treated by me—the tumours disappeared but death followed. Extracts of tissues or malt in small doses might enhance the effects of radium treatment. Perhaps a more promising method would be the production dietetically of a mild generalised degeneration.

Though the cause of pellagra is not definitely settled it is very probable that it is a food deficiency disease. Goldberger and Wheeler in America claim to have produced the disease in prisoners by giving a diet rich in carbohydrates and deficient in proteins. But more recent work indicates that the absence of a vitamin may play a part. This vitamin is abundant in yeast and was designated P–P by Goldberger, B_2 by British biochemists, and G by American biochemists. When this vitamin is withheld from the diet of rats, their growth is arrested, and their skins become susceptible to various rays and exposure to these will produce epidermal degeneration with the destruction of the superficial layers of the epidermis. A similar condition takes place in patients suffering with pellagra, and they are exceedingly susceptible to the sun's rays. The proteins of various foods have not the same value in growth promotion; this has been called the biological protein value. This value depends on the relative amounts of the amino-acids, tryptophane, and lysine present in the protein molecule. It is probable that a double deficiency of vitamin B_2 and of proteins of high biolcgical values are concerned in the cause of pellagra.

It is too much to hope that the production of a mild pellagrous condition in patients afflicted with malignant tumours would be sufficient to cause the arrest and absorption of the tumours. Yet it appears that a diet deficient in growth-promoting factors and which renders the cells susceptible to injury by rays is indicated for patients being treated with X rays or radium.

I am, Sir, yours faithfully,

LUCIUS NICHOLLS, M.D. Cantab.,
Director, Bacteriological Institute, Ceylon.

Colombo, Nov. 16th, 1929.

OLD EPSOMIAN CLUB.

ANNUAL MEETING AND DINNER.

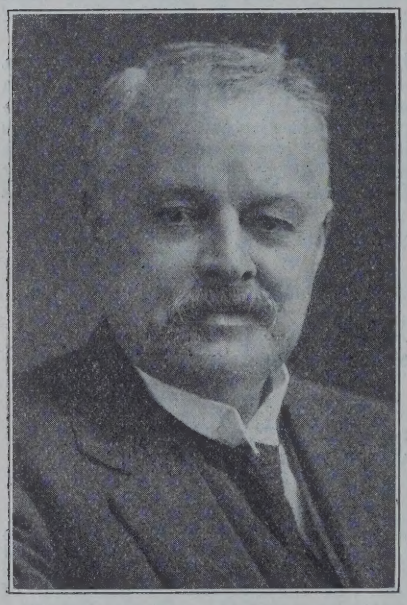
THERE are at the present time 877 enrolled old scholars of Epsom College, of whom 118 attended the annual meeting and dinner of the Club at the Wharncliffe Rooms on Dec. 12th. This was the fifty-second gathering of the Club and the attendance was the same as last year and larger than on any other occasion. Leavers of nearly every possible year were represented under the genial chairmanship of Brig.-General T. G. Mair (1885–89), late Colonel Commandant of Sierra Leone. We add the dates of his school years to emphasise the fact that the common bond was that of having lived and played rather than worked together. The Chairman, in proposing "Floreat Epsomia," said that 300 of the present boys are members of the Officers Training Corps, the remaining 100 being ineligible owing to youth or health—a 100 per cent. record. He spoke of the death of the President, Lord Rosebery, to whom the school owed its very name, and of the appointment of Lord Burnham to succeed him. He welcomed the presence of Sir Henry Dixon Kimber (1873–81) who is standing next year as a Sheriff of the City of London, and he paid tribute to the Headmaster as "a live wire in everything he does." Mr. A. C. Powell, replying, gave some of the school's current academic records—46 matriculations, six with honours, 12 first M.B. passes during the last 12 months, entrance scholarships at three London hospitals—but was followed with greater acclamation when he set out the record of the cricket XI. with eight wins, three draws, five losses, and of the Rugby XV. with nine wins, one draw, and no loss. The toast of The Guests was proposed by Mr. A. C. C. Parkinson (1896–1903) who dealt searchingly with the gaps he had observed in medical knowledge which, he said, resembled wire fencing in being "a concatenation of lacunæ." Response for the guests was made by Dr. A. Middleton Hewat, senior medical officer, L.C.C., not an old scholar but with two sons at the school. The toast of The President was proposed by Mr. J. S. Cotman (1887–93). In the course of the evening Sir Cecil Armitage (1884–85), late Governor of Gambia, presented the golf championship cup to Mr. H. L. G. Hughes (1903–10). The meeting took for granted the services of the hon. secretaries of the Club, to whose labours its success was so largely due—namely, Mr. R. M. Handfield-Jones (1907-10) and Major W. L. Giffard.

Obituary.

DANIEL LEWIS THOMAS, M.R.C.S. ENG., D.P.H.

WE regret to announce that Dr. D. L. Thomas, medical officer of health for Stepney, died on Dec. 10th at the age of 60. His record in the public health service commanded general respect, while his personal characteristics won many friends and brought him a warm welcome in many different quarters.

Daniel Thomas was born in Newcastle Emlyn, South Wa'es, and served a year's apprenticeship there with the late Dr. Lloyd before entering on his medical course in London. He always felt very thankful for this year; he used to say that it was one of the best preparations a man could have, and he remained one of Dr. Lloyd's closest friends. In 1886, he entered the London Hospital and thus formed an association with the East End which continued uninterruptedly to his death. Immediately after qualifying in 1892 he started as a general practitioner in the Mile End-road and he soon had a lucrative practice, but in spite of increasing responsibilities, he found time to reao for his D.P.H., and in 1896 when there was a vacancy for the post of medical officer to the Limehouse District Board of Works Thomas was elected. On securing this appointment he studied law and was called to the Bar in 1900.



DR. D. L. THOMAS.
[Photograph by Elliott and Fry.

He remained medical officer to the Limehouse Board of Works until the district ceased to exist as a separate sanitary area. Under the Local Government Act of 1899, Limehouse was united with Whitechapel, Mile End, and St. George's in the East, and formed into the present Borough of Stepney. In the autumn of 1900 Dr. Thomas was elected the first medical officer of health of this borough, where he had worked since his entering the London Hospital as a student. Although the conditions of general practice at that time had something to do with his decision to enter the public health service, undoubtedly the course of events proved his decision to be the right one. He entered into his work with all the ardour of youth and the enthusiasm of the pioneer; and both were needed, for the difficulties with which he had to contend appeared almost insuperable. He was the first whole-time medical officer of health for Limehouse, and also for Whitechapel, Mile End, and St. George's in the East. His predecessors were all doctors in general practice. The soil was practically virgin soil. The infantile mortality was in the neighbourhood of 200 per 1000 births. The credit of being the first district to appoint a health visitor is claimed by many towns and probably the honour is due to St. Helens, but Stepney was one of the first London boroughs to make such an appointment, and from this beginning was built up an elaborate system of child welfare centres, day nurseries, and antenatal clinics. A feature of the work at Stepney was the numerous voluntary agencies which worked for the public health, and to Dr. Thomas is the credit for smoothly coördinating these agencies and fitting them into one scheme for maternity and child welfare.

In his early days as medical officer Thomas had to fight grimly against the sophistication of food and the sale of diseased meat. It is probable that he was more than any other health officer instrumental in the prevention of the sale of diseased meat. He was, of course, backed by his council and ably supported by the late Mr. Dickenson, who was then the magistrate at the Thames Police-court. Some of the offenders suffered imprisonment and the new medical officer was threatened with all kinds of penalties if he proceeded against the law-breakers. But neither threat nor cajolery could effect any deviation from what he considered to be the strict path of his duty. His district bordered on the river and contained some of the largest wharves in London. Food inspection early claimed his attention, and in those years he was constantly called upon to give expert evidence upon the condition of tinned food. Stepney suffered severely in the small-pox epidemic of 1901 and 1902, and recently in the present epidemic of mild small-pox. He had seen thousands of cases of small-pox, and as his clinical acumen was of a very high order, he was recognised as an authority in the diagnosis of the disease. He published privately a brochure on diagnosis in the present outbreak, and the medical practitioners of Stepney to whom it was issued found its contents extremely valuable and suggestive.

During the war Dr. Thomas undertook night duty at the London Hospital in order to relieve the overworked staff, and he was one of the few medical officers of health appointed as local food officers. He acted as executive food officer for his borough during the period of food control and also during the general strike. With its cosmopolitan population Stepney was one of the most difficult districts to administer, and abuses were prevented only by his wide and deep knowledge of its citizens.

It has been said of Thomas that he was "a Celt to his finger-tips, with all the national characteristics and prejudices of the Celt. He was in some respects a paradox. In the office he was a strict administrator, utilitarian in his views; outside he was a dreamer and an idealist. In public he was efficient and economical; in private generous. He was a mystic, but he was also intensely sociable." Possibly it was on account of the blend of mysticism and sociableness that Freemasonry appealed to him. He admired its ritual and welcomed its opportunities to exercise the virtue of charity. He was a Past Grand Director of Ceremonies, a founder of several lodges, and a liberal supporter of all the Masonic charities. For many years he was chairman of the London Welsh Rugby Football Club, and he was connected with so many other organisations that no social function amongst the London Welsh seemed complete without the presence of "Dr. Dan" as he was affectionately called. The association with Wales was retained to the end, for he spent his summer vacation every year on the Cardiganshire coast, and was known by fame to large numbers of his fellow-countrymen, even in remote parts.

Dr. Thomas died of psittacosis in the London Hospital, with which he had been connected directly or indirectly since his student days. He leaves a widow with a son 8 years of age.

JOHN SADLER CURGENVEN, M.R.C.S., L.S.A.

Dr. Curgenven, whose death occurred in an attack of angina pectoris on Nov. 25th at his home at Chiddingfold (Surrey), was educated at Merchant Taylors' School, and entered St. Bartholomew's Hospital as a student in 1881. Four years later he

took the qualifications of M.R.C.S., L.R.C.P., L.S.A., and joined his father, Dr. John Brendon Curgenven in a well-established practice at 12, Craven Hill Gardens, Bayswater. Both father and son were much in request for the treatment of childish ailments, and the son wrote for the use of his own patients a little book, "The Child's Diet," which has had a wide circulation in three editions since its first appearance in 1905. On the retirement of his father in 1890 he carried on the practice singlehanded until 1916, when he joined the R.A.M.C.; in the last year of his service with the Corps he was P.M.O. for the district round Bath. On demobilisation he retired to the country and lived at "Granthams," Chiddingfold to the time of his death.

Dr. C. W. Emlyn writes: "Curgenven was a very eminent practitioner, and a man of fine character and great personal charm. He never enjoyed robust health and the weight of his large practice often tried his strength, though he worked on cheerfully and thoroughly. He looked forward keenly to the leisure of retirement, and to having a garden of which he was very fond. Like most Cornishmen he was irresistibly drawn to the rugged scenery of his ancestors, and from his cottage at Coverack he devoted himself to sea-fishing with the rod. He knew a lot about church architecture, and an excursion with a friend who shared the same enthusiasm was one of his chief delights."

Dr. Curgenven married Ethel, second daughter of Mr. Maurice Grant of Lancaster Gate, Bayswater, who with their only daughter survives him. He was buried at Brookwood on Nov. 29th, within two days of his sixty-seventh birthday.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE MENTAL TREATMENT BILL

IN COMMITTEE IN THE HOUSE OF LORDS.

ON Tuesday, Dec. 10th, the House went into Committee on the Mental Treatment Bill, the Earl of DONOUGHMORE, Chairman of Committees, in the chair.

Power to Receive Voluntary Boarders.

Clause 1 provides that any person suffering from mental disorder who is desirous of voluntarily submitting himself to treatment, and who makes written application, may be received as a voluntary boarder in an institution without a reception order.

Lord SANDHURST moved an amendment to omit the words "suffering from mental disorder" in order to make it as easy as possible for persons suffering from incipient symptoms to become voluntary boarders. It should not be necessary for a person to be so far gone in the disorder as the words in the clause implied before submitting himself to treatment. Under the corresponding section of the Lunacy Act, 1890, there was no definition of a voluntary boarder. All that was necessary was that a person should be desirous of voluntarily submitting himself to treatment.

Earl RUSSELL accepted the amendment in a slightly altered form, and it was agreed to, the clause then reading "any person who is desirous of voluntarily submitting himself to treatment for mental disorder," &c.

Viscount BRENTFORD moved an amendment to alter from 18 to 21 the age at which any unmarried person suffering from mental disorder, whose parent or guardian is desirous of submitting him to treatment, may, if the parent or guardian makes written application, be received as a voluntary boarder. He said it was a little questionable whether a person of 18 should be allowed under any circumstances voluntarily to place himself or herself in a mental home.

Earl RUSSELL explained that the age of 18 was adopted from an amendment which the House inserted in the Mental Treatment Bill of 1923. It was thought well to follow that Bill. He suggested that Lord Brentford should agree to a later amendment in the name of Lord Danesfort to accompany the consent by a medical certificate.

The amendment was accordingly withdrawn.

Consent of Parents in Adolescent Cases.

The Earl of CRANBROOK moved an amendment to provide that where an unmarried person was not under 16 his consent to the application by the parent or guardian should be given in writing. He said that he was moving the amendment on behalf of the London County Council, which had a great many mental institutions of considerable experience in dealing with people suffering from mental disorder. The Council felt that the age of 18 was too high for the parent to have sole control.

Earl RUSSELL said that it would be better not to accept the amendment in view of the one to which he had alluded, which would reinforce the judgment of the parent or guardian by a recommendation of a medical man. In that case their lordships would feel that a person whose parents expressed a desire that he should be treated voluntarily would be protected if the application were supported by a medical man. The Government proposed to use the word "recommendation" rather than "certificate." They wished to avoid the use of the word "certificate," which suggested the certification of a patient.

The Earl of CRANBROOK pointed out that persons of 16 who were able to marry—a much graver step than going for treatment to a mental hospital—should have a voice in their own affairs.

Lord DAWSON said that if they were dealing with people of normal mind he would give his support entirely to a young person having the right of decision, but unfortunately Nature had decided this matter, and these mental disorders, which might easily develop into insanity properly so-called, very often arose at the ages of 16 and 18. The very existence of these mental disorders, slight as they might be at that stage, made these young people very difficult. Sometimes it was almost impossible to cure them in their own homes. They were, in a sense, anti-social, and therefore they needed rather more pressure than persons who were normal. In fact, these young people suffering from these incipient disorders were to be looked upon more in the light of normal persons who were younger by two years, and it was because of the conditions which they had to meet that it was desirable to put a little more power in the hands of the parents in respect of this particular type of ailment. If they provided that there should be a medical certificate or medical recommendation—which, he agreed, was the better term—they would meet the difficulty and safeguard the Bill against abuse.

Viscount BRENTFORD said that the whole tenor of Lord Dawson's speech made him anxious. The clause related to the voluntary right of a person to shut himself up. It was not a question of pressure, but of a condition of mental disorder under which the patient was not able to take a voluntary decision. Under the clause a young man of 18 might, if he wanted, make a voluntary decision and go into a mental home without any doctor's certificate.

Lord DAWSON: With a doctor's certificate.

Lord BRENTFORD: Without. The voluntary judgment of this so-called voluntary patient was to be taken away, and pressure was to be put on him by the parent and the doctor who was prepared to sign the recommendation. The very essence of the clause was that it was voluntary and the amendment would be an improvement. It would make the Bill more popular as well as more reasonable.

Lord BANBURY said that he agreed with Lord Dawson that the clause was not a voluntary one, but one which might lead to pressure.

The amendment was withdrawn.

Lord DANESFORT moved an amendment to provide that a young person under 18 might be received as a voluntary boarder if the written application of the parent or guardian were accompanied by a medical recommendation. He said he understood that the Government were prepared to accept the amendment. It was quite possible that in some cases there might be parents or guardians who would like to lock up a child who might be a little unruly or disagreeable, and in the interests of the liberty of the subject it was desirable to have some further protection in the Bill. On the second reading, Lord Dawson and others had suggested that this incarceration of a young person should not take place unless there was a medical certificate or recommendation stating that it was desirable for him to be so detained, He moved the amendment as being, at any rate, a partial remedy for what might have been a great evil.

Earl RUSSELL said that if it was desired to afford an expression of will in regard to persons between 16 and 18 he would consider the matter before the Report stage.

Viscount BRENTFORD expressed regret that a young person under 18 could be locked up in any home or asylum without judicial proceedings. Under the clause as it was proposed to be amended, a young person who might be a troublesome or even unwanted child was to be locked up

on the recommendation of one doctor without the right, which he had to-day, to go before some kind of judicial officer, even a magistrate.

Lord ATKIN urged that some provision should be made to meet the case of a young person whose consent had been obtained to being placed in a hospital to begin with, and who could only be removed at the request of his parents or guardian.

Lord MERRIVALE said it would be a grave innovation on the Common Law rights of His Majesty's subjects if, instead of the age of 16 which for generations had been known as the age of right and responsibility on the part of individuals, they substituted an arbitrary age without any safeguard except the certificate of one medical man.

Earl RUSSELL agreed that this was an invasion of the Common Law right of personal liberty, which was recommended in the interests of the patient. It would be for the House to decide whether or not, on balance, the course proposed would be in the interests of those patients and would lead to their recovery. The question of the consent of the person of 16 had not been met because the suggestion that he should consent before going in had not been before them until that moment. It followed naturally that if the patient over 16 had to consent to go in for this treatment he must continue to consent when he was there. That would be one of the matters which he would consider on the Report stage.

The amendment was agreed to.

Boarders who become Incapable of Volition.

Clause 2 provides for notice of reception, death, or departure of voluntary boarders and makes provisions for boarders who become incapable of volition. The third paragraph of the clause provides that if any person received as a voluntary boarder becomes at any time incapable of volition he shall not be retained as a voluntary boarder for longer than one month, but shall on or before the expiration of that period be discharged, unless in the meantime he has again become capable of volition or steps have been taken to deal with him either under the principal Act as a person of unsound mind or under this Bill as a person incapable of volition who is likely to benefit by temporary treatment.

Lord SANDHURST moved an amendment to provide that the medical superintendent or other person in charge of the institution should decide whether the voluntary boarder had become incapable of volition. He said that somebody should be made responsible for formulating an opinion as to the patient's incapacity of volition. Nobody could more properly be made so responsible than the superintendent of the institution, or the person into whose charge the voluntary patient had gone.

Earl RUSSELL accepted the amendment, which was agreed to.

Temporary Treatment without Judicial Authority. Lord Brentford's Amendment.

On Clause 5 (Provision for treatment without certification of persons temporarily incapable of volition),

Viscount BRENTFORD moved in Subsection (1) to leave out the words "on a written application duly made in accordance with the provisions of this section but without a reception order." He said that the question he desired to raise was whether these patients who were suffering from mental disorder, and who were incapable of volition but likely to benefit by temporary treatment, might be shut up under the decision or certificate of two doctors without the judicial authority which up to the present had been regarded as of vital importance. The Royal Commission did not take the view which the Government had adopted, and he (Lord Brentford) desired to move an amendment which embodied the proposal of the Commission. It had been drafted by a lawyer with that purpose in view. He suggested that the Royal Commission's view was the right one, and that the Government's view was wrong. In order to save the expense he proposed that instead of two doctors there should be only one, but that there should be a magistrate who should see the patient, and his friends if necessary, and decide whether it was really desirable in the interests of the subject that the liberty of the subject should be done away with. That was a very important matter. Up to the present they had never allowed that liberty to be interfered with by any advisers, except under judicial authority. If the form of judicial authority proposed was objected to he would assent to any form which met with the approval of Lord Russell. But was it not a very great alienist who said that the number of wives who came to ask him to certify their husbands was only equalled by the number of husbands who came to ask him to certify their wives? There was nobody who was directly the friend and adviser of the incipient patient except a judicial authority who was quite independent of those who desired to place the patient under control. The question had nothing to do with the skilled opinions of medical men as against those of the law; it was a question whether there should be any person unconnected with the patient, unconnected with the medical adviser, somebody representing the law of the land, called in to consider if the patient should be locked up or not.

Earl RUSSELL said they might take it that this amendment was a test amendment covering the whole of the suggestions which Lord Brentford had made on this part of the Bill.

Viscount BRENTFORD: Certainly.

Earl RUSSELL said that neither he nor the Minister of Health had any objection to a judicia authority in itself. The objection, unfortunately, came from the patient and his relatives. It was quite true that a judicial authority was recommended by the Royal Commission with great reluctance, but it was thought very much better for the patient that the matter should be done in a less formal way. They wanted under this Bill to treat incipient mental disorder without the stigma of certification. He would beg Lord Brentford not to talk about persons being "locked up," and being "put away." Those were the very expressions which it was desired to get out of the mind of these patients. They wanted to talk to them about being treated for their health, and to assimilate the treatment as far as possible with the treatment for ordinary illness. Detention might be a necessary part of it, but it was not the part on which they desired to insist. He would ask their lordships to reflect on the protection given by the Bill. Did they suppose that if two competent medical men had signed a certificate giving perfectly clear facts on which they based their conclusion that a justice would take upon himself in the ordinary way to override that certificate? The most he could do would be to see that everything was regularly done. That, of course, became the duty both of the superintendent of the institution to which the patient was taken and of the Board of Control who received the certificate. They were much more competent to perform that duty than the ordinary justice. He asked their lordships not for the sake of a fetish to throw away a reality, and to resist Lord Brentford's amendment.

Lord DARLING said that Mr. Hugh Macmillan, K.C., who was the Chairman of the Royal Commission, was of opinion that what was proposed in the Bill was the proper way of dealing with these incipient mental cases. He was not a doctor; he was a justice of the peace for every county in England, because he was a member of the Privy Council, yet he had come to the conclusion that the intervention of justices of the peace would be bad for the patient.

Lord LAMINGTON said he hoped Lord Brentford would withdraw his amendment.

Lord SANDHURST said that Lord Brentford had referred to the fact that for 200 years the law had been such that a patient's liberty could not be interfered with except with judicial authority; but 200 years ago views on lunacy were entirely different from those of to-day. He hoped that the amendment would not be carried.

The Earl of ONSLOW said that he quite saw the point made by Lord Russell and by other speakers that it was very difficult to distinguish in the public mind between a certificate for temporary treatment of a man who was not a lunatic and a full certificate. He (Lord Onslow) would suggest that it might be possible to entrust the endorsement of the recommendation of the two medical men to the Commissioner or the Assistant Commissioner of the Board of Control, or at any rate to the authority of that Board rather than to a judicial authority.

Lord MERRIVALE said he hoped that Lord Russell would consider Lord Onslow's suggestion. In 999 cases out of 1000 it was most desirable that these people should be under treatment, but everyone knew that the odd case occurred, whether through interest or malice, or some indirect motive, and produced mischief. Certainly it had been the practice in this country to safeguard the liberty of the subject. The present procedure was really not a safeguard. For a delicate matter of this kind he thought they might have a body of referees nominated in the public interest as proper persons. There would be a panel of qualified persons in whom medical men and everyone else who knew anything about the matter would have confidence.

Lord HANWORTH said that he hoped that the Government would hold to the Bill. If the matter was pressed to a division he would vote against the amendment. The same reluctance would be shown to go before a board of referees as to go before the magistrates. The stigma was really the same and such a step would interfere with the recovery of these patients. So long as the matter was left in the hands of the medical man, and treatment was given by the medical man, there was some hope for them. After all, they were only going to be treated for six months with the safeguards provided in the Bill.

The Marquess of SALISBURY said that their lordships would appreciate that the matter was one of some difficulty.

The decision was not a purely medical one. Unless Lord Russell was willing to consider the difficulty of determining what the actual volition of the patient was, and whether he had exercised it, then he (Lord Salisbury) would feel a great difficulty in regard to his vote.

Earl RUSSELL said that he did not think that the difficulty would arise in practice. The person was not necessarily comatose—confusional was rather the word. A great many of the confusional cases were so excited and upset by the procedure of certification, and by seeing a justice, that it very often put them back as much as six weeks before they began to make progress in the quiet surroundings of the asylum. That kind of excitement was very bad for their unstable brain. The patients were very well protected, and he hoped that their lordships would reject the amendment.

Viscount CECIL of CHELWOOD suggested that a way out of the difficulty might be to insist that one of the two medical practitioners who were to sign the recommendation for temporary treatment should be a person who had been proposed for the purpose by the Board of Control.

Earl RUSSELL said that that was a valuable suggestion, and he would certainly consider it before the Report stage.

The Medical View.

Lord DAWSON said he would like to make it clear that the medical profession had no objection to safeguards, provided those safeguards were such as would not prejudice the cure of the patients. They frankly admitted that those patients with which this Bill dealt constituted a class that had not hitherto been dealt with by the legislature. They were people for the most part living in small houses and earning small incomes. The difficulties were much less among the well-to-do. They had large houses where persons mentally sick might perhaps have two nurses and where the treatment could be carried out quite easily. The class of patient to which this Bill referred was a class that was grievously suffering with very little or no opportunity of being relieved. Take the case of an out-patient at a hospital. That patient might have influenza or some simple illness. He went there with a feeling of depression under a power of self-criticism, subject to introspection, and might go step by step down to that absolute suffering which they all knew, and for which they were powerless to do anything under present conditions. If they wanted to do anything with such patients now they had to be certified. That brought him to the question of certification. The word conveyed notions of a madman and all the things that had been from generation to generation associated with that name. He was quite prepared to admit that many of the fears entertained were unreasonable, but they existed, and those who had to do with the sick constantly found these difficulties arising. It had to be borne in mind that the patient whom they hoped to help by this Bill was often a very sensitive, a very impressionable, and sometimes a very competent person—someone who was cut a little bit too fine for the environment in which he had been placed. These people were very easily wounded—he meant in their nervous system. They were a class which was increasing in the civilisation which existed to-day. They might be very competent in their work, they were very often efficient and capable of being leaders. They often came across them in the War. Such people might get some toxic condition arising from influenza; or, in the case of a woman, it might be due to childbirth. Under the stress or strain of that, or because of overwork, they began that down grade with which their lordships were familiar. They would have a want of confidence, would indulge in self-criticism and self-abasement, and might in the end become insane. There was no class which had to be more carefully handled by medical men. There was no class of illness which required a greater intuitive insight, a greater tenderness, and a greater sympathy. One false word and their influence had vanished. Very often they had carried the patients along and convinced them that all their distresses, their sleeplessness, that burden of life which had become a horror to them, was due to overwork and that by proper treatment they would get better. Then suddenly the patient turned and said: "Do you think I am mad? Do you think I am going to lose my reason?" They were so quick in feeling that. Supposing one had carried the patient along with one, or supposing he had reached the stage when the doctor had to put him under treatment, and at that time anything like certification was introduced the patient's friends and all the people in his social circle would entertain certain feelings towards him. It was a fact that certification was associated with a very grim past. Anything that interfered with the secrecy and the confidential relationship of medical advice was to be avoided, and that was why it was so important that the provisions of this Bill should be carried out. They could have precautions if they liked, provided they did not become so cumbersome as to render the measure nugatory. Their lordships knew how very anxious people were if there was any question of insanity in the family. It was for those reasons that he would like to emphasise the benefits of this Bill. It would enable the poorer classes to get at any rate some of the benefits which were now open to the more prosperous classes. Further than that, it would do what the medical profession, and those who had thought in this matter, desired: it would bring about the prevention of insanity. The Bill did not deal with insanity and therefore they asked that it should be kept away from all mention of the machinery of insanity. Its whole object was to take these people suffering from mental illness in the same way as they took people suffering from physical illness and treat each according to his need. If that was carried out, with any precautions that were suitable provided they did not run counter to the feelings of the people they desired to help, he was confident that this Bill would be of great service to the community.

Viscount BRENTFORD said that he realised the dangers and difficulties that might arise to the incipiently insane person, or the man or woman suffering from mental disorder, from the fact of the judicial inquiry which he had suggested, and that in consequence they might go over the line. But with all due deference to Lord Dawson, he (Lord Brentford) thought that the fact of finding themselves in a registered mental institution, or in a public lunatic asylum, was much more likely to have the effect of pushing these patients over the line than a mere judicial investigation. He did not wish, however, to press his amendment either to carry it or lose it by a small majority. That would be undesirable in the interests of these patients and he proposed to withdraw the amendment and ask Lord Russell if he would consider the various proposals made by Lord Cecil and others which might get over this difficulty. They were worth consideration. He (Lord Brentford) would be very glad to discuss the matter with Lord Russell in order to arrive at a solution which he was sure the whole House desired.

Earl RUSSELL said that he would be only too delighted to confer with Lord Brentford on the matter.

The amendment was, by leave, withdrawn.

Extension of Temporary Treatment.

Lord SANDHURST moved an amendment to provide that where it was anticipated that a person who was undergoing treatment as a temporary patient under Clause 5 would not recover within the period of six months, but his early recovery appeared reasonably probable, that period might from time to time be extended for further periods of such length, not exceeding three months, as might be specified in directions given by the Board of Control upon the application of one of the persons making the original application, accompanied by such evidence or recommendations as the Board might by rules prescribe; provided that such further periods should in no case exceed six months in all. He said that the Mental Treatment Bill of 1923 contained a similar provision. It seemed to be obvious that if a patient having the advantage of temporary treatment without certification had not fully recovered, but was likely to recover, by the end of six months it would be a great pity to compel him to accept certification in order to complete recovery.

Earl RUSSELL accepted the amendment, which was agreed to.

Clause 5 was agreed to.

The Earl of ONSLOW moved on behalf of Viscount Brentford a new clause to provide that the rules made under the Bill should be subject to the sanction of Parliament.

Earl RUSSELL accepted the amendment, which was agreed to.

The Committee stage of the Bill was concluded.

BILLS ADVANCED AND WITHDRAWN.

THE Highlands and Islands (Medical Service) Additional Grant Bill was read a third time in the House of Commons on Dec. 9th, and was introduced in the House of Lords and passed through Committee without amendment on the 17th. On Dec. 12th the Children and Young Persons (Employment and Protection) Bill was withdrawn.

COLONIAL POLICY AND HEALTH SERVICES.

On Dec. 11th, in the House of Commons, Mr. MARLEY moved the following resolution:—

"That, in the opinion of this House, the native population of our dependencies should not be exploited as a source of low-grade labour; no governmental pressure should be used to provide wage-labour for employers; due care should be taken of native social well-being; the native demand for land should be adequately and satisfactorily met and their rights therein properly safeguarded; where the native population is not yet fitted for self-government, direct imperial control of native policy should be fully maintained; native self-governing institutions should be fostered; and franchise and legal rights

should be based upon the principle of equality for all without regard to race or colour."

He said that it was not his intention, or that of the Labour Party, to make the coloured races and their problems the playthings of party politics in the House of Commons. It was generally recognised by the white races of the world that they owed a great deal to the coloured races, and that it was their duty to accept the trusteeship which economic power had given to them over the fortunes and destinies of those people. He would exclude India from the discussion, as that was the subject of a Commission whose Report in due course would receive a great deal of attention in the House and elsewhere. He appealed to the Government to see how far it was possible to institute a medical service or native hospital within the reserves. He was informed that there was only one native hospital in the whole of the East African territories, Uganda, Tanganyika, and Kenya. There was a medical service carried on by missionaries, very low indeed in regard to expenditure and very inefficient in regard to medical qualifications.

Mr. CHARLES BUXTON seconded the resolution.

Mutilating Operations on Women and Girls.

The Duchess of ATHOLL said she desired to bring before the House some reasons why some Members of the House who had been studying conditions among women and children in the Crown Colonies—women and girls particularly—felt that there was urgent need for more consideration to be given to the social well-being, health, and education of women and girls in some of the Dependencies than seemed to be the case at present. This small group of Members of all parties who had been considering this question for some months had met missionaries of different churches of long standing in different colonies, also laymen and women, including doctors, and they were all deeply concerned at many of the things which they had learned bearing on the the status, the health, and the welfare generally of women and girls. In particular they had been terribly impressed by what they had learned about the existence of a pre-marriage rite among young girls in African tribes, a rite which was frequently referred to as the circumcision of girls. This obtained in Southern Nigeria and among one tribe in Uganda, but it existed in its worst form among the Kikuyu tribe in Kenya. It was not a subject to deal with publicly, but she brought it before the House because none of them could afford to forget the responsibility for the Colonial Empire which was directly governed by that House. She doubted whether, apart from missionaries and doctors, and perhaps Government officials, there were many white people who realised what this rite was and what it meant to the health and well-being of the girls and women. The committee to which she had referred have been assured by medical men and missionaries who have attended these women in hospital and in their homes that the rite was nothing short of mutilation. It consisted in the actual removal of whole sets of parts connected with the organs of reproduction. The operation was performed publicly before one or two thousand people by the old woman of the tribe, who was armed with an iron knife. No anæsthetic was given and no antiseptics were used. The old woman went with her knife from one girl to the other performing the operation, turning the knife once or twice on each victim. A lady missionary steeled herself to see this operation not long ago and had given a description of it, fortified by photographs which she had taken. She told the Committee that the girl had a whistle put into her mouth so that her screams would not be heard. A medical man told them that the operation left great scarring and meant much contraction; the natural processes were gravely interfered with, and there was reason to believe that blood-poisoning resulted, with the consequence that there was terrible suffering at childbirth and the first child was rarely born alive. It was difficult to ascertain the extent of the mortality because there was no register of births or deaths, but one missionary who had attended many of these young women in hospitals on their confinement told her recently that out of 10 persons affecting 20 lives only six lives survived. She had also been told of a boarding house for 60 girls of this tribe where a death had occurred every year lately from sometimes a trivial cause. A cut finger might turn so septic, owing to the poisoning from which the girl had suffered, that that type of injury might cause her death. What was the policy of the Government in regard to this terrible thing? The Committee have also been assured by a medical man of standing in East Africa that while there was a lesser form of the operation, which was not so severe as form of mutilation as the one she had described, it was an operation which he would not sanction by anyone under his control. Surely one of the best ways in which to persuade people was to give them practical demonstrations of other and better ways; and that surely meant that every opportunity should be taken to help these people to be healthy, and to help the women to realise that if they did not go through the operation they could become mothers with much less suffering and danger to their children and to themselves. When they inquired as to what was being done in Kenya in the matter of the care of women in childbirth, they found that there were no midwives practising in the reserves; at least, that was their information. They were told that though there were several Government hospitals—Mr. Marley, who moved the resolution, she thought was misinformed on the question of hospitals—there were only women nurses in two of them. Therefore the majority of these hospitals were not very well equipped for attending women in their confinement. No doubt it might be difficult to find any women trained as midwives, but they could show a splendid example of what could be done in that way. They were informed that in the Protectorate there were 26 centres for maternity and child welfare, and as a result in the last ten years the infant mortality-rate had dropped from 500 per 1000 births—a terrible level—to not more than 130 per 1000 in Uganda. What was possible in Uganda should be possible in Kenya. Kenya had its mission boarding-houses and boarding-schools maintained by the various missions where African girls were admitted and given an all-round training for several years. She had no doubt that the training was the best possible training for practice as midwives. Referring again to the question of the pre-marriage rite, the Duchess of Atholl said that she had heard of a case of a Christian girl who wished to avoid being subjected to the more severe form of operation, but she was seized by her relatives and obliged to submit. Where the urgency of the question came in was this. An appeal was made to a native court for damages against the operator, but the magistrates ruled that no grievous hurt had been done to the girl.

Dr. MORGAN: What is the date of the prosecution?

The Duchess of ATHOLL said that she believed it was July of this year. The case was carried to the Supreme Court, where the decision of the native court was upheld, so that the woman who inflicted the terrible operation on this girl against her will only had to pay 30*s*. They must assume that the Supreme Court was carrying out the law, but in that case the law must be altered. She understood the policy of British Governments of all political complexions had been to avoid interference as far as possible with native customs, subject to this qualification, that they were not contradictory to justice and humanity. She asked the House what could be more inhuman that the practice which she had described.

Reply to the Debate.

After further discussion,

Dr. DRUMMOND SHIELS (Under Secretary of State for the Colonies), replying to the debate, said that the resolution referred to the social well-being of the natives. One of the first considerations in that connexion was health. In the Colonial Department increasing attention was being given to health questions. There were now 56 separate medical departments in the Colonies with 2000 qualified medical men and women. The Colonial Office served in some measure as an Imperial Ministry of Health. The Chief Medical Officer at the Colonial Office kept in touch with the medical problems of the overseas medical officers, and there was an advisory medical and sanitary committee and a medical research committee. These committees reviewed medical problems and stimulated and advised upon medical research. Very much more work and more research were required. They should be grateful to the Duchess of Atholl for raising the question of the pre-marriage rite. He could assure the noble lady that she was pushing an open door so far as he was concerned. He detested the practice, and he knew that the Secretary of State for the Colonies shared his view. It was his duty, however, to point out the difficulty of interfering with such traditional customs. While he did not say that that was an absolute bar to action, it did constitute a great difficulty. A number of the local Native Councils in East Africa had passed resolutions making illegal the severer forms of the operation. The Secretary of State was exploring the matter further, and collecting all the available information, and in the light of that, he might be able to take action which he hoped would satisfy the noble lady, and also satisfy the conscience of the House of Commons.

The debate was adjourned.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 11TH.

Colonial Health Services.

Duchess of ATHOLL asked the Under Secretary of State for the Colonies the numbers of the African populations of Tanganyika, Kenya, and Uganda, respectively; and, in the last year for which figures were available, what was the amount spent by the governments of these colonies, respectively, on midwives, hospitals, child welfare, and any other

form of health service, and in the education of women and girls, distinguishing services supplied direct by government and services supplied by missionary bodies with the aid of a government grant.—Dr. SHIELS replied: The following is the information asked for. I may add that my noble friend is taking steps to ascertain what can be done to further the objects mentioned in the question and other matters of native welfare.

(1) The latest estimate of the numbers of the African population of these dependencies is as follows: Tanganyika, 4,740,706 Uganda, 3,241,543; Kenya, 2,838,022.

(2) In the last year for which returns are available the total Government expenditure in these dependencies on health services, exclusive of capital expenditure, was:—Tanganyika, £232,467 (1928–29); Uganda, £141,713 (1928); Kenya, £199,198 (1928).

(3) The following approximate amounts were spent on (*a*) upkeep of hospitals, and (*b*) construction and repair of hospitals (excluding in both cases expenditure on personnel).

(*a*) *Upkeep of hospitals.*—Tanganyika, £16,015 (1928–29); Uganda, £12,250 (1928); Kenya, £12,076 (1928).

(*b*) *Construction and repair of hospitals.*—Tanganyika, £14,974 (1928–29); Uganda £2,254 (1928); Kenya, £16,269 (1928).

(4) The other detailed information asked for as regards expenditure on Health Services is not available.

(5) As regards education, no figures showing separately expenditure on female education in these dependencies are available.

(6) The grants made by the three Governments to mission bodies in respect of health and educational services totalled:—(*a*) Tanganyika, £15,906 (1928-29); (*b*) Uganda, £30,641 (1928); (*c*) Kenya, £33,500 (1928). No information is available showing in detail the services on which these grants were expended.

Pensioners and Treatment Allowances.

Major COLVILLE asked the Minister of Pensions if he would consider amending the regulation in regard to treatment allowances which required that any payments from welfare or similar funds received by the pensioner during treatment should be deducted from the treatment allowance.—Mr. F. O. ROBERTS replied: The special allowances which may be payable during treatment are subject to the condition that the patient is found to be unable, in consequence of the course of treatment given to him, to provide for the support of himself and his family. It is, therefore, and always has been, a condition of the grant of these allowances that the patient shall not at the same time draw both the maximum allowance and also draw payment such as wages or sick pay in lieu of wages.

Married Men in Criminal Lunatic Asylums.

Mr. SORENSEN asked the Home Secretary whether he could give the figures of married men in the criminal lunatic asylums who were serving terms under commuted death sentence.—Mr. CLYNES replied: Two men now in Broadmoor Criminal Lunatic Asylum, having been transferred there while serving commuted death sentences, have wives living.

Health Insurance Benefits in the Services.

Sir KINGSLEY WOOD asked the Minister of Health whether he could state the additional benefits payable to members of the Navy, Army and Air Force Insurance Fund.—Mr. GREENWOOD replied: The additional benefits payable to members of the Navy, Army and Air Force Insurance Fund who continue their membership after discharge from His Majesty's forces are an increase of the normal rates of cash benefits by 4*s.* a week sickness benefit, 2*s.* a week disablement benefit, and 8*s.* maternity benefit; payment of the whole cost of certain treatment benefits—viz., dental treatment and the provision of artificial teeth; ophthalmic treatment and the provision of spectacles; and the provision of medical and surgical appliances.

Position of Local Government Medical Officers.

Dr. VERNON DAVIES asked the Minister of Health if he had considered, in relation to the recommendation of the Royal Commission on Local Government (Final Report, page 107, paragraph 341), the case of medical officers of local authorities, such as a public vaccinator, a district medical officer under the guardians, and a medical officer of health to an urban or rural district council; and whether he would issue a statement to local authorities as to the position of such officers in respect of membership of local authorities.—Mr. GREENWOOD replied: The recommendations of the Royal Commission are now under my consideration. I do not think that a special statement to local authorities on the matter is required at the present time.

Hospital Accommodation and Expenditure.

Mr. THOMAS GRIFFITHS asked the Minister of Health if he would furnish a return of the numbers and beds, comparable with that given in the House of Commons on 1st March, 1926, for hospitals provided by local authorities, voluntary hospitals aided by local authorities, institutions provided by Poor-law authorities, and giving, for the latest possible year, the expenditure in each of the three classes.—Mr. GREENWOOD replied: The following is the information asked for: So far as general hospitals are concerned, the information in my Department indicates that one large general hospital with 875 beds, and three relatively small accident hospitals have been provided by local authorities, but the total number of beds is not known. Local authorities are empowered by Section 84 of the Public Health Act, 1925, to make reasonable subscriptions or donations to voluntary hospitals to the extent of the produce of a penny rate. The amount subscribed by local authorities under that section in 1927-28 was £25,000. Under Section 38 of the Poor-law Act, 1927, Boards of Guardians may, with my consent, make contributions to public hospitals. In 1927-28 the amount contributed under this section was £44,000.

The information with regard to hospitals of the other classes referred to in the question is as follows:—

(*A*) *Hospitals Provided by Local Authorities.*

—	No.	Beds.	Expenditure of local authorities in 1927–28.
			£
1. For tuberculosis ..	166	12,787	1,802,000*
2. For acute infectious diseases	287*	36,833†	3,490,000†
3. Maternity hospitals (not including maternity wards in general hospitals or Poor-law Institutions) ..	79	1,034	201,447
4. Babies' hospitals.. ..	11	253	

* Including the expenditure in connexion with beds for tuberculosis mentioned in the following note.

† At 44 of these hospitals there are 2,205 beds for the treatment of tuberculosis. The expenditure on these beds is excluded from item 2.

(*B*) *Voluntary Hospitals Aided by Local Authorities.*

1. Tuberculosis hospitals ..	138	9,202	825,000†
2. General hospitals—			
(*a*) Used in connexion with tuberculosis schemes	164	—*	
(*b*) Used in connexion with venereal diseases schemes	130	—*	Not available.
(*c*) Maternity sections used in connexion with maternity and child welfare schemes	22	267	78,000
3. Maternity hospitals (not including maternity sections in general hospitals)	65	1,323	
Babies' hospitals	12	347	

* Available beds used as and when required.

† Including expenditure of the Welsh National Memorial Association on sanatoria and hospitals.

The figures under the above headings are exclusive of accommodation in homes for unmarried mothers and their babies, observation wards in connexion with maternity and child welfare centres, and convalescent homes. Those under *B* 2(*c*) are exclusive of accommodation used by local authorities in general hospitals for special or complicated maternity cases, as regards which figures are not available.

(*C*) *Institutions Provided by Poor-law Authorities.*

			£
1. Institutions wholly for the sick, exclusive of institutions for mental cases ..	73	40,000	4,119,000
2. General institutions (with a total accommodation of some 188,000)	552	83,000(*a*)	8,625,000(*b*)

(*a*) Beds in infirm and sick wards.

(*b*) Total expenditure on general institutions.

Vaccination Exemptions.

Mr. FREEMAN asked the Minister of Health whether he could announce any concessions in respect of the Vaccination Acts, which he promised to consider after receiving a deputation in October; and whether he would arrange for a public inquiry, in view of the fact that more than 60 per cent. of the population claimed exemption for their children at birth.—Mr. GREENWOOD replied: I have under consideration the whole subject of vaccination, including the desirability of some further inquiry, but I am not at present in a position to make any announcement on this question. I may point out that the latest figures available—namely, those for 1927, show that in that year, not 60 per cent., but just over 40 per cent. of the parents made declarations of conscientious objection to vaccination.

The Standard of Overcrowding in the Census

Mr. SIMON asked the Minister of Health, whether he was aware of the standard of overcrowding adopted by the Registrar General in the Census and by the majority of medical officers of health; and whether he would arrange for a more satisfactory standard to be adopted at the next Census, taking into account, in particular, the provision of the necessary bedroom accommodation to provide for the separation of the sexes.—Mr. GREENWOOD replied: This matter is receiving my attention in connexion with the preparations for the forthcoming Census.

Institutions for Mental Defectives.

Mr. EDE asked the Minister of Health how many local authorities had provided institutions for the residential care of the mentally defective; and how many had not up to the present made that provision.—Mr. GREENWOOD replied: Twenty-eight local authorities have provided institutions for the residential care of mental defectives. Eighteen have schemes in progress. Seventy-eight have not up to the present made any institutional provision of their own.

MONDAY, DEC. 16TH.

Appeal Tribunal in Pensions Cases.

Mr. GOULD asked the Minister of Pensions whether any steps had been taken with a view to securing a medical appeal tribunal to enable ex-Service men to submit their cases where conflicting opinions existed between the man's own doctor and the Ministry's medical advisers.—Mr. ROBERTS replied: The machinery of formal appeal to an Appeal Tribunal is, in my judgment, not the most suitable or most expeditious mode of determining such purely medical matters as the form of treatment appropriate to a particular case, where there is a difference of opinion on this point on medical grounds. I have, however, arranged that any difficult cases of this character, where representations are made by panel doctors, are reviewed at the Headquarters of the Ministry.

Deterioration following Final Award.

Mr. LONGDEN asked the Minister of Pensions if he would instruct area officers to grant the right of re-appeal for a renewal of pension, under the procedure for the correction of errors, where the ex-Service man claimed to be suffering from deterioration following a final award.—Mr. ROBERTS replied: I would point out that it is open to any pensioner in receipt of a final award to apply for treatment for a condition due to war service. If, as a result of such treatment, the award is found to have been seriously erroneous as an assessment for permanent purposes, a further grant can be made.

Married Inmates of Lunatic Asylums.

Mr. SORENSEN asked the Home Secretary the number of married inmates of lunatic asylums who had been certified for more than five years; and if he would give the figures of those who had been in asylums for ten years and upwards—Mr. WILLIAM WHITELEY replied on behalf of the Minister of Health: Statistics collected by special inquiry in 1921 showed that on Jan. 1st. in that year there were 43,871 male and 55,883 female patients under care in institutions for the insane in England and Wales. Of these, 14,058 men and 19,292 women were described as married, of whom 7,121 men and 10,801 women had been certified for more than five years. Information in regard to married patients who have been under care for ten years and upwards is not available.

Rent Restriction Act and Slum Clearance.

Dr. LITTLE asked the Minister of Health whether his attention had been called to the inquest conducted by the City coroner on Nov. 29th, 1929, on a death occurring in Clerkenwell slum property, where a tenement comprising six small rooms, occupied by 23 men, women, and children, could not be demolished and rebuilt by the owners by reason of the Rent Restriction Act; and whether he was prepared to introduce legislation, by way of amendment of the Rent Restriction Act, in order to provide that, where the owner of property bona fide desired to pull down the same for rebuilding, for commercial purposes or otherwise, he should be entitled to an order for possession, subject to his providing reasonable alternative accommodation for the displaced occupiers.—Mr. GREENWOOD replied: The answer to the first part of the question is in the affirmative. In reply to the second part, I would point out that existing legislation provides that an order for possession may be granted by the Court whan a dwelling-house is reasonably required for any purpose which, in the opinion of the Court, is in the public interest, and the Court is satisfied as to the existence of alternative accommodation, and that it would be reasonable to grant the order.

TUESDAY, DEC. 17TH.

Deaths from Cancer.

Mr. FREEMAN asked the Minister of Health the average number of deaths from cancer during the last 10 years, and whether there had been any substantial increase or decrease recently.—Miss SUSAN LAWRENCE (Parliamentary Secretary to the Minister of Health) replied: Particulars of cancer deaths and mortality-rates in each of the last ten years will be found in the Registrar-General's Statistical Review for 1928, Part I., Tables 4 and 5 on pages 10 and 24–25, and in the Chief Medical Officer's Report for 1928, pages 167–175. With regard to the latter part of the question, so many factors are involved in any discussion of the tendencies of mortality from this cause that I can only refer the hon. Member to the commentary upon the subject which is annually contained in the Text Volume of the Statistical Review, and of which the last example will be found commencing on page 58 in the Text Volume for 1927.

National Health Insurance Fund.

Mr. REMER asked the Minister of Health the amount paid into the National Health Insurance Fund by employers and employees during 1928.—Mr. GREENWOOD replied: The amount paid into the National Health Insurance Fund during 1928 in respect of contributions by employers and employees in England and Wales was £23,187,000, of which it may be estimated that the employers' share was approximately £11,793,000 and the employees' share £11,394,000.

Medical and Health Services in Uganda and Kenya.

The Duchess of ATHOLL asked the Under Secretary of State for the Colonies how many village dispensaries and maternity centres for the use of natives were now in existence in the Protectorate of Uganda; how many trained native midwives were now on the roll in that Protectorate; how many were trained annually by the Government, the Church Missionary Society, and the Third Order of St. Francis, respectively, in Uganda; and whether he proposed to suggest to the Government of Kenya that they should establish a scheme similar to that in Uganda for the provision of trained native midwives for the natives of Kenya.—Dr. SHIELS replied: The latest information available in the Colonial Office relates to the year 1928. There were then 56 district sub-dispensaries in the Uganda Protectorate in addition to 24 native hospitals at which dispensary treatment could be obtained and 41 maternity centres. Four new maternity centres were in course of construction. There were 93 native midwives on the official midwives roll on Jan. 1st, 1929. In 1928 the average number of student midwives in training by the Church Missionary Society was 24, and 15 passed the qualifying examination during the year. At the Mill Hill Mission, where the sisters of the Third Order of St. Francis work, the average number of students was 21 and three natives qualified. The Protectorate Government contributes annual grants to missions for the maintenance of midwifery centres and midwives. As regards the last part of the question, steps have already been taken in the matter in Kenya by the Government and by voluntary effort. At the end of 1928 there was a number of child welfare clinics in operation in Nairobi, Mombasa, and Kisumu, and additional centres were to be opened in Mombasa this year. The Lady Grigg Child Welfare League has maternity homes and child welfare centres in Nairobi and Mombasa. The training in midwifery of Indian and native women is undertaken at these centres.

BRISTOL HOMŒOPATHIC HOSPITAL.—Miss Wills last week opened a new children's ward at this hospital which has been given by Mr. and Mrs. W. Melville Wills. The hospital was originally built and equipped by Mr. and Mrs. Wills as a memorial to their son.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL.—This hospital, which has cost £65,000, was opened last week by Mr. Talbot Cliff who, with his uncle, the late Mr. Stephen Cliff, has been a large benefactor to the institution. It replaces the existing Frodingham Cottage Hospital and contains 72 beds; the complete scheme provides for 112 beds.

ST. BARTHOLOMEW'S LIGHTHOUSE.—The lighthouse on the top of St. Bartholomew's Hospital, the beams of which remind London that an appeal is being made for a fund of a million, is mounted on the roof of the new surgical and operation block, about 120 feet from the ground. The lamp is a Philips 5000 watt, 500 volts of standard type. The candle-power of the beam is estimated at 750,000, and the light has been seen as far away as Bedford.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A meeting of the Council was held with Lord Moynihan, the President, in the chair, on Dec. 12th, when the Fellowship of the College was conferred on the following:—

Mani Shanker Khushaldas Joshi, Bombay and St. Bart.'s; Robert Malcolm Dannatt, St. Bart.'s and London; David John Jones, Cardiff and Westminster; Griffith John Griffiths, Cardiff and Middlesex; Edgar Frederick King, Bristol; James Ivor Griffiths, Cardiff and Univ. Coll.; Ambrose John King, London; Noel Ellis Laurence, St. Bart.'s.; Harry Vernon Wells, Charing Cross; Arkyl Staveley Gough, Guy's; John Francis Edward Gillam, St. Thomas's; Howard Livingstone Peake, Guy's; Frank William Law, Middlesex; Beatrice Gwendoline Smith, Univ. Coll.; John McNeill Milloy, Glasgow and London; Jack Gardiner Wigley, Cambridge and St. Thomas's; William Pickup Greenwood, St. Bart.'s; Allan Warren Linford Row, St. Bart.'s; Edward McLellan, St. George's; William Charles Wallace Nixon, St. Mary's; Reginald Eric Norrish, St. Bart.'s; Stanley Farrant Russell, St. Bart.'s; Shafik Shalaby, Cairo, London, and King's College; William Elphinstone Underwood, St. Bart.'s; Frank Forty, Univ. Coll.; Mahapitiyage Velin Peter Peiris, Ceylon, London, and St. Bart.'s; William John Hunt Montgomery Beattie, Cambridge and St. Bart.'s; Mohanlal Vanichand Modi, St. Bart.'s; Harry Silvester Waters, Cambridge and St. Mary's; Marcus Cole Rous, Cape Town, London, and Guy's; Harry Teesdale Simmons, Manchester and Guy's; Philip Wiles, Middlesex; Julian Ormond Smith, Melbourne and St. Bart.'s; James Dawson, Glasgow and St. Bart.'s; David Nathan Eppstein, Otago and Guy's; Alfred Laurence Johnston, Melbourne and London; Aubrey James Mason, Otago and Guy's; Arthur Rainsford Mowlem, Otago and London; Leith Alexander Riddell, Otago and St. Thomas's; Arthur Liddon Webb, Adelaide and St. Thomas's; and Frederick Edward Webster, Otago and Guy's.

Diplomas of Membership were granted to Eric Marks (St. Mary's) and Alison J. Rae (Royal Free).

Mr. Cyril H. Howkins, was re-elected a Member of the Board of Examiners in Dental Surgery. Lord Moynihan was re-elected the representative of the College on the Court of the University of Birmingham. The Blackburn and East Lancashire Royal Infirmary and the Hampstead General and North-West London Hospital were recognised for the 12 months' surgical practice required of non-Members before admission to the Final Fellowship Examination. It was reported that Sir Frank Colyer would give two demonstrations on the Odontological Collection on March 12th and 19th, 1930.

With regard to the resolution passed at the Annual Meeting of Fellows and Members on Nov. 21st affirming the desirability of admitting Members to direct representation on the Council, the following reply was adopted:—

No evidence has been submitted to the Council that the change in the constitution of the College advocated in the resolution is desired by any considerable number of Members of the College, and the Council is therefore not prepared to reopen the question at the present time.

A recommendation from the Board of Examiners in Dental Surgery that a higher dental diploma for licentiates in dental surgery of the College should be instituted was further considered, and it was decided to consult the dental schools regarding the proposal. It was suggested by the examiners that the diploma should, if possible, be called diploma of Fellow in Dental Surgery, F.D.S. R.C.S. Eng., but the consideration of the title to be given to the diploma was deferred.

Primary Fellowship Examination.

At the Primary Examination for the Fellowship, held from Dec. 3rd to 13th, 155 candidates presented themselves and 49 were approved. The following are the names and medical schools of the successful candidates:—

H. J. B. Atkins, Oxford and Guy's; D. A. Beattie, St. Bart.'s; T. H. Berrill, M.B., Bristol; D. D. Boovariwala, M.B., Bombay and King's Coll; J. T. Chesterman, M.R.C.S., Bristol, King's Coll., and Middlesex; H. O. Clarke, M.B., Dublin and Middlesex; Dorothy J. Collier, M.B., Oxford and King's Coll.; S. B. Cooper, M.B., and K. K. Dalal, M.B., Bombay and London; F. F. D'Arcy, M.S., Melbourne, King's Coll., and St. Mary's; N. B. Fadia, M.B., Bombay and King's Coll.; B. W. Fickling, King's Coll.; K. J. Gilchrist, Guy's; W. G. Gill, Cambridge, Guy's and King's Coll.; F. J. S. Gowar, Middlesex; A. J. Grace, Saskatchewan and Oxford; L. Greenfield, London; I. A. Hamilton, M.B., Adelaide, King's Coll., and Middlesex; Hariharan, M.R.C.S., Madras and King's Coll.; K. H. C. Hester, London; J. C. Hogg, B.Chir., Cambridge and St. Bart.'s; D. T. Ishmael, St. Bart.'s; E. Jacobson, M.R.C.S., London; Katherine M. Jones, Lond. Sch. Medicine for Women; R. A. Jones, Cambridge and London; G. S. Kelkar, M.B., Bombay and Middlesex; A. W. Kendall, M.B., King's Coll.; M. L. Kennedy, M.B., Dublin and Guy's; V. J. Kinsella, M.B., Sydney, King's Coll., and St. Mary's; R. S. Lewis, Cambridge and Univ. Coll.; K. Lumsden, M.B., Edinburgh and Middlesex; J. Mark, M.B., Otago and King's Coll.; S. N. Mathur, M.B., Lucknow, King's Coll. and Guy's; C. B. Melville, M.B., Melbourne, Middlesex, and King's Coll.; Gertrude M. B. Morgan, M.D., Cambridge, St. Mary's, and King's Coll.; H. F. Moseley, McGill and Oxford; W. Mushin, London; R. W. Nevin, Cambridge and St. Thomas's; T. H. Parkman, King's Coll.; R. G. Pulvertaft, Cambridge and St. Thomas's; J. R. Ratcliffe, M.R.C.S., Guy's; B. C. Rennie, M.B., Otago, King's Coll., and St. Mary's; V. C. Snell, Cambridge and St. Bart's; H. H. Stewart, M.D., Melbourne and Middlesex; G. O. Tippett, M.R.C.S., St. Thomas's; A. G. Williams, M.B., Cardiff and St. Bart.'s; H. M. Williams, St. Bart.'s; B. Willinsky, M.D., Toronto and Univ. Coll.: and D. S. P. Wilson, M.B., Dublin and Middlesex.

UNIVERSITY OF LONDON.—At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.S.

Honours.—R. K. Bowes (*c*, *e*), Univ. of Liverpool; C. R. E. Freezer (*b*), Guy's Hosp.; Archibald Gilpin (*a*), King's Coll. Hosp.; D. H. Haler (*b*), King's Coll. Hosp.; Harry Temkin (*a*) Univ. Coll. Hosp.

(*a*) Distinguished in medicine; (*b*) in pathology: (*c*) in forensic medicine; (*e*) in midwifery.

Pass.—H. W. Applin, Guy's Hosp.; C. B. Bloom, London Hosp.; E. J. C. Bockett, King's Coll. Hosp.; A. M. Boyd, St. Bart.'s. Hosp.; Bertha A. Briant, L.S.M.W.; A. P. L. Cogswell, King's Coll. Hosp.; C. N. Cohen, Guy's Hosp.; Mabel J. Cooke, L.S.M.W.; Philip Dalzell, St. Bart.'s. Hosp.; C. C. Davis, Univ. Coll. Hosp.; G. H. Dobney, Middlesex Hosp.; C. J. East, St. Bart.'s. Hosp.; Lilian P. Edwards, L.S.M.W.; Muriel F. M. Evans Charing Cross Hosp.; M. J. Evans, St. Bart.'s Hosp.; A. D. Everett, St. Bart.'s Hosp.; B. M. Fonseka, Middlesex Hosp.; R. A. Furniss, Univ. of Liverpool; F. W. Gilbert, Guy's Hosp.; Alice E. N. Gilby, L.S.M.W.; Sibyl D. Goodwill, King's Coll. Hosp.; D. R. Griffith, St. Thomas's Hosp.; Grace M. Griffith, Univ. of Leeds; T. R. Griffiths, St. Bart.'s Hosp.; R. W. Haines, Univ. Coll. Hosp.; Margaret L. Hamburger, L.S.M.W.; E. O. Harris, Middlesex Hosp.; C. V. Harrison, Welsh National School of Medicine and Univ. Coll. Hosp.; G. F. Harrison, St. Thomas's Hosp.; G. B. M. Heggs, St. Mary's Hosp.; E. A. H. Hinghaugh, London Hosp.; R. C. Holderness, Univ. of Leeds; G. MacI. Housden, Guy's Hosp.; Simon Kin, King's Coll. Hosp.; R. A. King, St. Mary's Hosp.; K. E. Lane, Guy's Hosp.; L. P. E. Laurent, Univ. Coll. Hosp.; F. J. G. Lishman, Univ. Coll. Hosp.; Dorothy M. Lufkin, Univ. Coll. Hosp.; Gladys E. McCabe, L.S.M.W. and St. Mary's Hosp.; J. F. Mackenzie, Guy's Hosp.; J. R. A. Madgwick, London Hosp.; E. W. Martindell, Univ. Coll. Hosp.; Olive M. Midgley, L.S.M.W.; T. H. Negus, St. Thomas's Hosp.; Doreen G. C. Nixon, Univ. of Bristol; Penelope A. Peach, L.S.M.W.; L. M. J. A. Pilot, St. George's Hosp.; N. E. Pitt, Guy's Hosp.; Raymond Purvis, St. Thomas's Hosp.; Sylvia M. Ransford, L.S.M.W.; N. W. Roberts, Univ. of Liverpool; W. P. Roe, Guy's Hosp.; Harry Selby, Guy's Hosp.; Rupert Shelley, St. Thomas's Hosp.; R. C. N. Shires, Univ. of Leeds; Samuel Shone, Guy's Hosp.; A. W. E. Soysa, King's Coll. Hosp.; Marjorie V. N. Sudds, L.S.M.W.; C. B. V. Tait, St. Bart.'s Hosp.; S. A. Underwood, St. Mary's Hosp.; L. E. Vine, Univ. of Bristol; W. H. S. Wallace, St. Thomas's Hosp.; Eileen A. L. Webb, L.S.M.W.; J. W. Wigg, Univ. Coll. Hosp.; E. M. Wijerama, Ceylon Med. Coll. and Univ. Coll. Hosp.; R. M. Williams, Guy's Hosp.; C. S. Wise, St. Bart.'s. Hosp.; H. S. H. Wood, Middlesex Hosp.; N. R. W. Wynn-Williams, Middlesex Hosp.

The following have passed in one of the two groups of subjects:—

Group I.—Kathleen L. Bland, Univ. Coll. Hosp.; Arnold Clark, St. Bart.'s Hosp.; T. V. Cooper, Westminster Hosp.; C. H. Dale, St. Bart.'s Hosp.; H. B. A. R. Densham, Guy's Hosp.; R. L. H. Harris, St. Bart.'s Hosp.; A. G. Harsant, London Hosp.; D. T. Jones, Guy's Hosp.; H. W. Jordan, Univ. Coll. Hosp.; Laura H. Macfarlane, L.S.M.W.; H. G. McGregor, Guy's Hosp.; F. M. Mallinson, Univ. Coll. Hosp.; C. E. H. Maycroft, Guy's Hosp.; L. H Mottet, Univ. Coll. Hosp.; C. M. Ockwell, Guy's Hosp.; G. F. Peters, Guy's Hosp.; E. S. Pope, St. Bart.'s. Hosp.; Barkat Ram, St. Thomas's Hosp.; A. C. Riley, St. Bart.'s. Hosp.; N. L. Shepperd, King's Coll. Hosp.; Helana Sidarous, L.S.M.W.; Brian Stanley, Univ. Coll. Hosp.; Harris Teitelbaum, Welsh National School of Medicine.

Group II.—E. F. D. Baker, St. Bart.'s. Hosp.; R. C. Bennett, St. Bart.'s Hosp.; P. C. C. de Silva, King's Coll. Hosp.; F. A. Edwards, St. Bart.'s Hosp.; J. D. S. Flew, Univ. Coll. Hosp.; H. S. Hamlin, St. Thomas's Hosp.; K. W. D. Hartley, St. Bart.'s Hosp.; H. B. Hodson, St. Thomas's Hosp.; A. S. Hoseason, St. George's Hosp.; John Ives, St. Mary's Hosp.; A. H. M. McMullan, Univ. of Birmingham; Robert Machray, Westminster Hosp.; J. R. Murray, London Hosp.; R. K. Price, St. Bart.'s Hosp.; Everell M. Shippam, L.S.M.W.; C. E. H. Turner, London Hosp.; R. C. Williams, St. Thomas's Hosp.

L.S.M.W.—London (Royal Free Hospital) School of Medicine for Women.

A HOSPITAL FILM.—A film has been made of the work of Birkenhead General Hospital, and will be shown at various cinemas in that town during the next two or three weeks.

UNIVERSITY OF BIRMINGHAM.—At recent examinations the following candidates were successful :—

M.D.

* J. W. Field and C. J. Polson.

M.B., CH.B.

T. A. Cooper, G. J. Garratt, I. B. Gumede, R. H. Hucknall, E. J. Kerr, E. J. Mann, P. H. Merlin, Ahmed Monib, J. D. W. Shedden, and Mary A. Tomlinson.

* With honours.

FINAL EXAMINATION FOR L.D.S.

W. J. Bate, N. L. Cookson, A. A. Dessouki, Boyce Douglas, R. J. Godfrey, W. B. Hales, B. J. O'Meara, D. A. Parsons, F. H. Richards, A. J. Simcox, A. E. Thomason, S. G. Watson, and W. B. Wood.

UNIVERSITY OF MANCHESTER.—At recent examinations the following candidates were successful :—

FINAL EXAMINATION FOR M.B. AND CH.B.

*Edith M. Booth, *F. N. Marshall, Alexander Allan, Hedley Boardman, R. O. Brooks, J. A. K. Brown, Christobel M. Hall, W. H. Harris, E. J. B. Sewell, and Nellie Wilson.

* Second-class honours.

Part I.—G. M. Lendrum.

FINAL EXAMINATION FOR B.D.S.

W. L. Lilley.

FINAL EXAMINATION FOR L.D.S.

W. J. Brown, and Norman Wild.

MEDICO-LEGAL SOCIETY.—The annual dinner of this Society was held at the Holborn Restaurant on Dec. 13th with the President, Lord Riddell, in the chair. Dr. Nathan Raw, in proposing the health of Medicine and Law spoke cordially of the work of the Medical Research Council and maintained that our lunacy administration was the best in the world. Lieut.-Colonel C. T. Samman, Master of the Apothecaries Company, replying for Medicine, contrasted the solid rock of the law with the fluidity of constantly changing medicine ; the two professions touched at many points and had in common that they treated their clients' secrets as confidential and did not advertise. He suggested that the enormous increase in the use of opium and cocaine, due to the hectic and intensive life of the younger generation, called for the coöperation of both professions. Mr. A. E. Mitchell-Innes, K.C., replying for Law, compared medicine and law in that the object of both was to remove inflammation and restore the temperature of patients to normal. The main propositions of law had to be fixed and definite in character ; he envied the medical profession the picturesque and much more highly coloured region of theory in which they enjoyed themselves. The barrister got back a little of his own when he demanded "a definite answer—yes or no" of the expert witness, but the speaker had never heard a competent expert witness fail to destroy the effect of the "yes" or "no" by his subsequent categorical explanation. He thought that the time might come when the well-known definition of insanity now acted upon in the courts would have to be adjusted. Progress in that direction would only be achieved by the best efforts of the best minds in both professions. Lord Greenwood, proposing the toast of the Medico-Legal Society, said that law and medicine represented the two indispensable foundations of the civilised state. The medical profession had no frontiers ; but lawyers were localised in accordance with the civilisation in which they operated. The medical profession was the only one with a common ideal and common ground, and was freer than any other from the superstitions and fears that held back mankind. Lord Riddell, replying, said he had a great respect for great professions and compared himself with the old lady who always bowed when the name of Satan was mentioned. "Civility costs nothing," she said, "and you never know what may happen." The Medico-Legal Society's Latin maxim could be rendered, "Truth lies wrapped up and hidden in the depths." This applied to science, medicine, and above all to legal proceedings. The Society had been started by coroners with a view to assisting in the discovery of truth. Its main object was to provide weapons to enable doctors and lawyers to discover truth ; sometimes they picked up golden nuggets and at other times dead cats. The badge of the Society depicted a well, on either side of which stood Sir Bernard Spilsbury and Sir William Willcox, looking very intently into the well, Truth being at the bottom, while the President and Members of the Society stood in the offing looking very anxious. Replying to the toast of The Guests, proposed by Sir John Collie, the Attorney-General, Sir William Jowitt, said that the administration of criminal law depended not only upon the doctors and the lawyers but also upon the press. Many years ago he had thought it a most essential reform that trials for blackmail should be held in camera ; this reform had been brought about without any Act of Parliament, simply by the good sense of the press. Speaking of the system of coroners' inquests, he reminded the audience that it was much easier to destroy a system than to build it up. The coroners' system went back to dim antiquity. The fact that coroners conducted over 30,000 cases a year and that the public demand for the abolition of the system related to only two or three cases, proved how extraordinarily well coroners conducted the very useful work entrusted to them. Mr. Donald Armour, also replying, said that, although the son of a chief justice and a member of a very large legal family, he had been attracted to the senior profession of surgery—senior, because the first operation on record (a rib resection) had preceded the first legal quarrel as to who had actually purloined the apple in the Garden of Eden. The Medico-Legal Society could play a great part in the education of the two professions, for the majority of doctors were notoriously bad witnesses, while all lawyers were hopelessly ignorant of everything pertaining to the practice of medicine and the art of surgery. The doctor had to be taught to answer questions about what he knew and the lawyer to ask questions about that of which he knew nothing.

DONATIONS AND BEQUESTS.—Mr. R. S. Belfield, of Hawkhurst, Kent, left nearly £34,000 on the death of his wife to be divided among a number of charities, 5 per cent. being allotted to the Royal Hospital and Home for Incurables, Putney, 5 per cent. to the Tunbridge Wells General Hospital, and smaller percentages to various other hospitals and nursing associations.—Among other charitable bequests Mr. G. Strachan, of Glasgow, left to the Glasgow Royal Infirmary, the Glasgow Western Infirmary, and Glasgow Victoria Hospital £1000 each, and a sum for the endowment of beds ; and to the Glasgow Eye Infirmary, the Princess Louise Hospital for Limbless Sailors and Soldiers, the Ralston Auxiliary Hospital of the Scottish Branch of the Red Cross Society, and St. Dunstan's Hospital for Blind Sailors and Soldiers, £500 each. To Glasgow Royal Hospital for Sick Children, £500, and to endow beds an additional £1500 ; to the Royal Samaritan Hospital for Women, Glasgow, and the Glasgow Royal Cancer Hospital, £500 each ; and to the Elder Cottage Hospital, Govan, Glasgow, £1000, and to endow beds an additional £1500.—Mr. William Anderson, of Aberdeen, left £1000 each to the Aberdeen Royal Hospital for Sick Children, the Aberdeen Nursing Association, and the Convalescent Home, Cults ; £500 to the Aberdeen Maternity Hospital ; and £250 each to the Morningfield Hospital, Aberdeen, and the Aberdeen Asylum for the Blind.

Appointments.

BINGHAM, T. H., M.D., B.Ch. Belf., D.P.H., has been appointed Assistant Medical Officer of Health and School Medical Officer for Ealing.

KERR, J. A., M.D., Ch.B. Glasg., D.P.H., Assistant Medical Officer of Health, Birmingham.

MCLEOD, J., M.B., Ch.B. Edin., D.P.H., Assistant Medical Officer of Health for Motherwell and Wishaw.

ROBERTS, J., M.B., Ch.B. Liverp., F.R.C.S. Eng., Hon. Assistant Laryngologist to the Liverpool Royal Infirmary.

STENHOUSE STEWART, D. D., L.R.C.P. Lond., M.R.C.S., Honorary Assistant Ophthalmic Surgeon to the Hull Royal Infirmary.

WHEELER, E. R., F.R.C.S. Eng., to be one of the Medical Referees under the Workmen's Compensation Act for the districts of the Bath, Calne, Chippenham, Devizes, Frome, Hungerford, Malmesbury, Marlborough, Melksham, Newbury, Swindon, Trowbridge, and Warminster County Courts.

Birmingham Children's Hospital : ROSSER, MARGARET, C., M.B., Ch.B. Birm., House Physician ; STAMMERS, F. A. R., M.B., Ch.B. Birm., F.R.C.S. Eng., Surgeon to Out-patients ; and TATE, B. C., B.Chir. Camb., M.R.C.P. Lond., M.R.C.S., Physician in Charge of the Skin Department.

Certifying Surgeons under the Factory and Workshop Acts ; HUGHES, E. R., L.R.C.P. Lond., M.R.C.S. (Holyhead) ; SCARBOROUGH, O. L., L.R.C.P. Lond., M.R.C.S. (Selby) ; and SIM, T., M.B., Ch.B. Glasg. (Ryde).

The Radium Institute : SMITH, A. J. DURDEN, M.B., B.S., Assistant in the Medical Department ; and WILKIN, W. J., B.Chir. Camb., House Surgeon.

Vacancies.

For further information refer to the advertisement columns.

Barnstaple, North Devon Infirmary.—H.S. At rate of £150.

Birmingham General Hospital.—H.P. and Two H.S.'s. Each £70.

Birmingham, Monyhull Colony, King's Heath.—Res. Asst. M.O. £250–£350.

Birmingham, Selly Oak Hospital.—Two Cas. O.'s. Each at rate of £200.

Bolton, Townley's Hospital, Farnworth.—Second Asst. M.O. £225.

Bradford Children's Hospital.—H.S. and H.P. Each £120.

Bradford Royal Infirmary.—Res. Surg. O. £250.

Bristol General Hospital.—Two H.P.'s, two H.S.'s, Res. Obstet. O., H.S. to Special Depts. Each at rate of £60. Also Cas. H.S. At rate of £80.
Bristol, Ham Green Fever Hospital, &c.—Asst. Res. M.O. £300.
Burnley, Victoria Hospital.—H. S. At rate of £125.
Bury St. Edmunds, West Suffolk General Hospital.—H.S. £150.
Cairo, Egypt, Giza Memorial Ophthalmic Laboratory.—Pathologist and Bacteriologist. L.E.£1200.
Cardiff, Prince of Wales' Hospital.—H.S. for Crossways Country Branch Orthopædic Hospital. £120.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S.'s. At rate of £120 and £100 respectively.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. First Asst. in Out-patient Dept. Also Third Res. H.S. At rate of £75.
Charing Cross Hospital, Strand, W.C.—Non-resident House Anæsthetist.
City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—Laryngologist.
Coventry and Warwickshire Hospital.—Res. H.S. £125.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £150.
Durham County Hospital.—Jun. H.S. At rate of £120.
Durham County Mental Hospital.—Jun. Asst. M.O. £350.
Edinburgh Royal Infirmary, Ophthalmic Dept.—Sen. Clin. Asst. and Clin. Tutor. £145. Also two Clin. Assts. Each £200.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
Great Yarmouth County Borough.—Asst. M.O.H. and Asst. Tub. O. £600.
Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also Clin. Asst. M.O. for Venereal Dept. £1 1*s.* per session.
Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150. Also H.P. and H.S. Each at rate of £120.
Lancashire County Council.—Asst. County M.O., &c. £800.
Leeds Jewish Herzl-Moser Hospital.—Res. M.O. £100.
Leicester Royal Infirmary.—Hon. Phys. and Hon. Surg.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150. Also Hon. Obstet. Surg.
Manchester, Ancoats Hospital.—Asst. Pathologist. £350.
Manchester, Baguley Sanatorium.—Asst. M.O. £350.
Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £250.
Manchester Royal Infirmary, Roby-street.—Jun. H.S. and Cas. O. £100.
Miller General Hospital, Greenwich-road, S.E.—H.P. and H.S. Each at rate of £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Northampton Education Committee.—Asst. School Dentist. £450.
Queen Mary's Hospital for the East End, E.—Hon. Asst. S.
Redruth, Cornwall, West Cornwall Miner's and Women's Hospital. Res. M.O. £200.
Rochdale Infirmary and Dispensary.—Jun. H.S. £175.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
St. John's Hospital, Lewisham, S.E.—Radiologist.
St. Mary's Hospital, W.—Asst. Pathological Chemist. £300.
Sheffield, Jessop Hospital for Women.—Two Asst. H.S.'s. Each at rate of £100.
Sheffield Royal Infirmary.—H.P., H.S., Ophth. H.S., Asst. Ophth. H.S., and Asst. Cas. O. Each at rate of £100.
Shrewsbury, Royal Salop Infirmary.—Res. H.S, and Res. H.P. Each at rate of £160.
Southampton County Borough.—School Dentist. £450.
Stafford, Staffordshire General Infirmary.—H.S. and H.P. At rate of £200 and £150 respectively.
Swansea County Borough.—Asst. M.O. £600.
University College Hospital, Gower-street, W.C.—Registrar at Royal Ear Hosp. £50.
University College Hospital Medical School, University-street, W.C.—Asst. in Obstetric Unit. £250.
Walsall General Hospital.—Cas. H.S. At rate of £120.
Warrington Infirmary and Dispensary.—Anæsthetist. £105.
West Hartlepool, Howbeck Infirmary.—Asst. Res. M.O. £300.
West London Hospital, Hammersmith-road, W.—Asst. Dental. S.
Westminster Hospital, Broad Sanctuary, S.W.—House Anæsthetist. At rate of £100.
Winchester, Royal Hampshire County Hospital.—Sen. Res. M.O. £200.

THE Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Camberwell.

Births, Marriages, and Deaths.

BIRTHS.

BAIRD.—On Dec. 8th, the wife of Dr. J. C. H. Baird, Southampton-street, Reading, of a daughter.
WOOKEY.—On Dec. 8th, at Hendon, the wife of Eric E. Wookey, *M.C.*, L.D.S. R.C.S., of a daughter.

DEATHS.

ALEXANDER.—On Dec. 9th, suddenly, at Gatefield House, Faversham, Sir Sidney Alexander, aged 66.
BARNARD.—On Dec. 13th, at King's College Hospital, after an operation, Walter Burrows Barnard, L.R.C.P., L.D.S., of Larpent-avenue, Putney.
HALL.—On Dec. 10th, at Woodways, Carbone Hill, Cuffley, Robert Mills Hall, O.B.E., M.B., C.M. Edin.
THOMSON.—On Dec. 10th, at St. James's-square, Bath, David Thomson, V.D., M.D., C.M., aged 85 years.
TUKE.—On Dec. 7th, suddenly, in Cheltenham, Lieut.-Colonel Arthur William Tuke, I.M.S. (retired) of "Stockwell," Cleevehill, aged 58.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

VOCATIONAL GUIDANCE.

AT a meeting of the London Association of the Medical Women's Federation, held on Nov. 26th, Miss F. M. Huxley took the chair, and an address on Vocational Guidance was given by Prof. Winifred Cullis. She gave an account of the establishment of the National Institute of Industrial Psychology, which grew out of the Fatigue Research Committee constituted during the war, and showed how valuable the Institute was proving at the present time, demonstrating the importance of the psychological factor in industry and its application to the workers in individual firms. The work done by the Institute was paid work, but no profit was made, for the balance was used for research. The advice of the Institute had been sought for various reasons—because of lessened output, and, on behalf of a firm of caterers, because of excessive breakages by the workers. By the correction of details of little apparent importance in routine work and by skilled observation of the workers, most dramatic improvements had been effected. As a natural outcome of the work of the Institute help was given to individuals in vocational selection, and tests had been devised which would show whether a prospective worker had a special aptitude for a given type of work. This was of great value, for otherwise haphazard and unscientific methods of selecting workers were employed. The head of a large dressmaking firm told one of the investigators that she always looked at the hands of prospective employees and if she noticed the nails were bitten she preferred not to engage the girl as she would probably prove to be bad tempered; the head of a rival firm said she used this same observation as a rough method of selection, but she showed a preference for candidates with bitten nails since they were often more artistic than the others. Vocational selection tests would show only whether a person was fitted for one particular type of occupation. The system had now been extended to embrace a scheme of vocational guidance, whereby an all-round examination would test both the innate intelligence of an individual and those qualities which cannot be tested by a written examination, the assessment of which is of great importance in determining the type of occupation for which an individual would be most suited. Experimental work on a large scale had been done on a group of elementary school-children. Two hundred children leaving school were chosen, 100 of whom were tested and advised as to the type of occupation in which they would do best. Wherever possible these children took up the suggested work. The other 100 children were not tested, and did not take up selected work. At the end of two years it was found that the children in the guided group had changed their occupation on an average twice, and those in the unguided group four times. The average wage in the guided group was considerably higher than in the other.

A further group of 600 children was being investigated at the present time, and there was scope for work on children from the secondary and public schools where individual choice of occupation was less influenced by economic pressure. The ages at which the tests were found to be of most practical use were from 16 to 18. The value of the vocational guidance tests was shown by some recent examples of individuals who had come to the Institute for help in choice of a career. One girl who had always been regarded as a dreary and eminently unsatisfactory child proved to be one of the most brilliant people ever tested. She was advised to go to a university if possible, and after six months' work she won a scholarship at Oxford where her latent abilities are having full scope, and the correctness of the Institute's estimate is being proved. Another girl who had already matriculated was found to be mentally aged about 10, and she was told that she would probably not do well in one of the learned professions. A boy destined to be a farmer was found to have an astonishing flair for colour and texture combined with great personal charm and a gift for handling men, and he had adopted a career where these would have fuller scope than on a farm. By making a more extensive use of these vocational guidance tests there would be fewer round pegs in square holes, and the sum of the world's happiness would be appreciably increased.

In reply to a question Prof. Cullis emphasised the effect of the speed at which a piece of work was done on the quality of the individual worker's output. When the rate of work was easily within a worker's capacity, A would work well and B would be bored and consequently work less well. By making the work harder B would do better but a strain would be put on A, and the practical difficulties of getting the optimum output from both A and B on the same work were considerable. Workers could be divided

into "sprinters" and "stayers" and it was important to find the type of work for which each was suited.

ANCIENT EGYPTIAN MEDICINE.

THE learned author of a little book[1] entitled "Magician and Leech," is convinced that most of the accounts of Egyptian medicine published in medical histories are in need of revision. All down the ages the search has continued for means of prolonging life and averting death; the magician with his spells, the astrologist with his horoscopes, the alchemist with his search for the philosopher's stone, and the medical researcher of to-day with his up-to-date armamentarium, all follow the same quest.

Mr. Dawson, who is well known as an authority on ancient Egyptian medical texts, gives an interesting account of the lengthy process of making a mummy, and, incidentally, refers to the importance of the knowledge of human anatomy acquired thereby by the ancient embalmers. The medical papyri of Egypt antedate the earliest records of any other country by thousands of years; they are epitomised here in eight sections, while reference is also made to later manuscripts, such as the *London-Leiden Magical papyrus* and to Coptic texts. As a result of mummification "Egypt made it possible for the Greek physicians of the Ptolemaic age to begin, for the first time, the systematic dissection of the human body, which popular prejudice forbade in all other parts of the world" (Elliot Smith). During the process of mummification, the heart attached to its great vessels was almost invariably left in situ. Surgical instruments have been discovered, splints were used for fractured limbs, but there is no evidence that tooth-stopping, or any other form of dental surgery, was practised by the Egyptians in Pharaonic times. Mummies, with evidence of Pott's disease, have been discovered and statuettes of achondroplastic dwarfs. A short chapter introduces us to the drugs in general use; those derived from the animal kingdom can mostly be identified, but only a relatively small proportion of the very large number of vegetable drugs used are known. The book ends with a chapter on the survival of ancient medicine, containing an interesting account of the measures recommended to be taken to discover if a woman were pregnant or not, and if the unborn child was to be a boy or a girl.

The work is excellently printed and will be an acquisition to the library of one interested in medical history.

"FISGARD."

To the Editor of THE LANCET.

SIR,—"Etymologist's" query is answered by the subjoined quotation from the late Prince Louis of Battenberg's "Men-of-War Names" (Stanford, London, second edition, 1908, pp. 29), of which there is a copy in the Library of the Royal United Service Institution:—

"*Fisgard* (3d since 1797), originally *Fishguard*.—On Feb. 22, 1797, a French squadron of four vesels landed in Fishguard Bay, Pembroke, some 1300 criminals, armed and dressed as soldiers, with orders to ravish the country, destroy Bristol, and attack Liverpool. They were speedily captured by the Sea Fencibles, Militia, and Yeomanry, led by the first Lord Cawdor. Tradition says that the Frenchmen mistook the Welsh women, who accompanied the local forces in their tall hats and red cloaks, for additional soldiers. On March 9 the *San Fiorenzo* (36) Capt. Sir Harry Neale, and the *Nymphe* (36) Capt. J. Cooke, fell in with the *Résistance* (40) and the *Constance* (22) two of the above-mentioned French squadron, on their way back to Brest, and captured them. The *Résistance* was added to the Royal Navy under the name of *Fishguard*, later altered to *Fisguard*."

From Fishguard (Pembroke) steamers run to Rosslare. Harbour (Wexford), and it was at one time attempted to make Fishguard a terminal port for transatlantic passengers

I am, Sir, yours faithfully,

Dec. 16th, 1929. SEA CAPTAIN.

HEALTH OF WEIHAIWEI.

IN a report for 1928 prepared by Mr. R. F. Johnston, the Commissioner, it is recalled that the leased territory of Weihaiwei, which has been administered by Great Britain since 1898, is situated in the north-east corner of the Chinese Province of Shantung, about 40 miles east of the treaty port of Chefoo. The area extends to 285 square miles and supports a population which at the last census (in 1921) was ascertained to be 154,177 but is now estimated at about 180,000, the increase being mainly due to the influx of refugees from other parts of the province, who having found the conditions of life intolerable under the gross misgovernment which has prevailed in Shantung during the past few years have been glad to find peace and security and a sympathetic administration under the British flag. There are over 350 villages in the territory, but the only port is a former Chinese village, now the thriving town of Port Edward, which is the administrative centre. The relations between the British authorities and the local Chinese population are said to be friendly and harmonious. The introduction of motor traffic, which had hitherto been absolutely prohibited, was perhaps the most notable and conspicuous innovation witnessed during 1928; there are now regular motor 'bus services from one end of the territory to the other.

Weihaiwei last year fully maintained its reputation as one of the healthiest spots on the Asiatic coast. In the foreign community there was only one death, and this resulted from drowning. The Chinese population suffered during the spring and summer from a rather severe epidemic of diphtheria and slight outbreaks of scarlet fever and measles. The medical officers trace these epidemics to the fact that during the year under review Weihaiwei was the resort of many half-starved refugees from other parts of the province, some of whom were either suffering from disease when they entered the territory or through privation and debility became easy victims to such causes of infection as existed locally.

State Hospitals.

There are three Government hospitals. The largest of them (under the direct superintendence of the British medical officers of the Government) is in Port Edward; the second is on the island of Liukung, where there is a Western-trained Chinese doctor under the supervision of the resident Surgeon-Commander in charge of the Royal Naval Sick Quarters, who holds the additional post of medical officer for the island, under the Civil Administration; the third is at Wên-ch'uan-t'ang in the heart of the territory, 13 miles from Port Edward, which is also in charge of a Western-trained Chinese doctor under European supervision. The total number of patients attending the three hospitals in 1928 was 20,311. This exceeded the number treated in 1927 by 1698. With regard to the locally prevalent disease of kala-azar, the medical officer reports as follows: "Eighty cases were under treatment during the year and they received 1830 injections; antimony tartrate is given intravenously in the majority of the cases, but in young children stibosan is used intramuscularly with good results. Sixty-four new cases were diagnosed, but only 48 returned for regular treatment; injections were given twice a week. The rapid increase in the number of injections indicates the popularity (and success) of the treatment and the faith of the patients in its efficacy, the figures being 796 in 1926, 1397 in 1927, and 1830 in 1928."

For the second consecutive year the territory was used for the purposes of a convalescent camp of 50 beds for the Shanghai Defence Force. Full use was made of this camp during the summer months of 1928 with highly beneficial results. A small sanatorium for the treatment of Chinese cases of tuberculosis—a somewhat prevalent disease in this territory—was established in 1928 near the seashore, about two and a half miles to the south of Port Edward. A new ward for Chinese paying patients was added to the Port Edward Hospital. The first patient to avail himself of this ward was a Chinese General, who, after defeat in a local civil war, became a refugee in Weihaiwei. For the first time in the history of the territory provision was made during 1928 for European patients by the addition of a ward of two beds to the Port Edward Hospital. Accommodation for Europeans in the small adjacent infectious diseases hospital was also made available by enlargement of the existing premises.

Leprosy.

Special interest attaches to the efforts made to deal with cases of leprosy in the territory by the adoption of the new treatment with alepol (intravenal hydnocarpate injections). The actual number of lepers in the territory is not great—official inquiries reveal a total of about 70. The new treatment is freely administered to all lepers, who submit themselves voluntarily to the doctor's hands. At the close of the year there were 15 patients undergoing regular treatment, and in several of these cases a marked improvement has already been noticed. A report (by Dr. Francis Clark, the senior medical officer) has been sent to the British Empire Leprosy Relief Association.

The rainfall during the first half of 1928 was much below the average, being only 3·7 inches. The drought was the cause of the almost total failure of the wheat crop and also gave rise to some anxiety with regard to the water-supply, which is derived from shallow wells. The total rainfall for the year, however, was 22·33 inches. Several additional wells were sunk by Government in the Port Edward area and fitted with pumps; and fears of a water famine were dissipated by the copious rains which began to fall in July. There are two thermal springs in the leased territory, the best known being that situated outside the East Gate of the walled city, on the outskirts of Port Edward, where bath houses were erected many years ago and are still in daily use.

[1] Magician and Leech. By Warren R. Dawson, F.R.S.E. London: Methuen and Co., Ltd. 1929. Pp. 159. 7*s*. 6*d*.

Campbell Oration

ON

PROGRESS IN UROLOGY.

Delivered at Belfast on Nov. 8th

BY ANDREW FULLERTON, C.B., C.M.G.,
M.CH. BELF.,

SURGEON TO THE ROYAL VICTORIA HOSPITAL, AND PROFESSOR OF SURGERY IN THE QUEEN'S UNIVERSITY, BELFAST; PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.

REMARKABLE advances have been made in urology since those of us who were contemporaries of Robert Campbell were students together. In those days the cystoscope was occasionally shown to us by our teachers as a sort of interesting toy which, like many another piece of apparatus, would in due time find its way to the scrap-heap. While thinking out the subject matter of this lecture, I took up a text-book of surgery in general use in my student days. There is not a word about the cystoscope in the chapters devoted to injuries and diseases of the urinary organs, and I cannot even find the word in the index. To-day we fairly bristle with cystoscopes, and a patient is fortunate if he escapes the ordeal of cystoscopy whatever his complaint.

In tracing the development of urology and the evolution of the cystoscope and urethroscope, frequent reference must be made to the work and writings of two great English-speaking urologists: Hurry Fenwick in England and Hugh Hampton Young in America. It would serve my purpose well if I had time and space to quote word for word the opening chapters of Fenwick's work entitled: "The Electrical Illumination of the Bladder and Urethra,"[1] published in 1889, and a paper by Young entitled: "The Renaissance of Urology,"[2] published in 1916. Young's account of the early history of urology is so full and interesting that I cannot do better than quote freely from it.

UROLOGY IN ANCIENT TIMES.

Urology was perhaps the first branch of surgery practised in ancient times. The inhabitants of India over a thousand years B.C. used the catheter to relieve retention of urine and the sound to dilate strictures. They were also, apparently, quite proficient in the operation of perineal lithotomy. In the Hippocratic writings (460 B.C.) will be found accurate descriptions of the formation of urinary calculi, of lithotomy and nephrotomy—and this at a time when practically no other operations upon abdominal viscera were attempted. By the Hippocratic oath the general practitioner was required to promise never to perform lithotomy, but to leave the operation to those who made a specialty of it. At the beginning of the Christian era operations for calculus, retention of urine, and urinary fistula were well conceived and skilfully performed. During the Middle Ages, while medicine was in the hands of the monks who disdained surgical operations, the practice of surgery was kept alive by the lithotomists. During this time the inhabitants of the town of Norcia, who were skilled lithotomists, were summoned to all parts of Europe and were frequently in the service of municipalities. The operation for stone, which up to this time had been almost entirely in the hands of these itinerant laymen, was finally taken up by the medical profession, through the work of a French surgeon named Germain Colot, about the year 1460. He went to Italy, ingratiated himself with a family of lithotomists, learned their methods and returned to France, where he commenced a series of experiments upon the cadaver, the results of which he reported to the medical faculty of Paris. He then applied to Louis XI. for permission to operate on a criminal condemned to death. Permission being granted, the operation was carried out in the churchyard, in the presence of the King. The patient made a good recovery and Colot was decorated by the King, appointed royal lithotomist, and became the father of a family which furnished France with its chief lithotomists for three hundred years. Although medical men, they kept the secret to themselves, just as the Norcians had done, until François Colot, the last of the family, gave the secret to the medical world in 1727.

General surgeons at this period seemed unable to make a success of lithotomy, so that the operation again passed into the hands of laymen, one of whom, a monk named Frère Jacques, marvellous to relate, invented and introduced the lateral operation for stone which requires far more precision and expert knowledge of anatomy than the median operation which was previously used. The story of Frère Jacques, his meteoric rise at court, the crowds that assembled to see his lightning-like procedures, his admission to the great hospitals of Paris (notwithstanding the protests of the surgeons), and his final departure in disgrace because most of his patients died, says Young, is one of the most thrilling histories of surgical literature. Frère Jacques died in 1720, and his operation, perfected by the English surgeon Cheselden, is notable as being based on the best anatomical principles. To this day the non-medical lithotomist flourishes in the East, and it is extraordinary how major operations in surgery have been largely left to uneducated persons. The famous Ambroise Paré learnt the operation of lithotomy from a Colot, and was one of its most accomplished exponents.

JOHN HUNTER AND AFTER.

Young pays great tribute to John Hunter as a pioneer in genito-urinary surgery. He says: "It was not until John Hunter came that the solid foundations of scientific surgery were laid." It is interesting to note that at that time there were two great surgeons in England, William Cheselden and James Douglas, who owed their reputation chiefly to their operations for stone. Hunter became the pupil of one of these, Cheselden, the author of the present lateral operation for stone, which he was able to perform in 54 seconds. It is very evident from a study of the clinical works of Hunter that his practice was largely genito-urinary in character. It was Hunter's custom to admit young men into his home as pupils, and it is not surprising to find that of these men who afterwards became famous the majority were particularly interested in genito-urinary surgery.

The history of urology in France during the eighteenth and nineteenth centuries comprises the work of almost all the celebrated surgeons of that period. Time will not permit me to mention the work of all who took part in the evolution of urology in France, but certain names, which include Civiale, Mercier, Maisonneuve, Guyon, and Albarran, are familiar to medical students of to-day in connexion with some special operation or some ingenious instrument. The most important invention of this time was that of stone-crushing by Civiale in 1818. Mercier's work on obstruction at the vesical neck and the ingenious instruments he devised were of great importance, but according to Young it was to Civiale first, and later to Guyon, that the medical profession owes most of the solid foundation upon which the superstructure of modern urology has been reared. Sir Henry Thompson in England, a brilliant pupil of Civiale, pursuing the careful research methods of John Hunter in anatomy and pathology, did more perhaps than any one man in the nineteenth century to bring urology into the very forefront of surgery.

It was not until about the middle of the nineteenth century that America, now one of the most progressive schools of urology in the world, began to exert an influence on this branch of surgery. About this time

there were several surgeons in America who had achieved great success as lithotomists, and of these special mention must be made of Bigelow, who revolutionised the treatment of vesical calculus. In 1878, at Boston, he began his great work on lithotrity by inventing stronger and more efficient lithotrites and introducing a powerful evacuating bulb by means of which the stone, broken into small fragments, could be completely removed. It may be news to some of us that the name "litholapaxy," by which the operation is now known, was suggested by Oliver Wendell Holmes.

Towards the end of the nineteenth century Austria and Germany entered the field of urological research. About this time Simon of Heidelberg began his epoch-making work on the kidneys. No one knew at this time whether a kidney could be removed with impunity. Simon set to work to solve the problem, and performed nephrectomy in a series of 30 dogs. The results placed the operation on a sound basis. The operation was then carried out with success by Simon in a young woman with a ureteral fistula. This was in July, 1869, and is, so far as I know, the first recorded case of nephrectomy in the human subject. The operation, however, owing to its great mortality, made little progress, so that as late as 1879 Pilcher was able to find only 15 cases in the literature. The reason for the failure of nephrectomy to find a place in surgery was due in the main to sepsis, but the work of Lister in 1867 soon began to exert its influence, and the surgery of the kidney was assured. In 1885 Samuel D. Gross collected 450 cases of operation on the kidney and found the mortality of nephrectomy for various diseases to be between 20 and 60 per cent. The present mortality ranges between 1 and 5 per cent.

Modern Urology and the Cystoscope.

The period of modern urology was ushered in by the invention of the cystoscope by Nitze in 1876. In 1879 Edison's invention of the incandescent electric bulb paved the way for the perfection of the cystoscope and the accompanying array of ingenious apparatus now at the disposal of the urologist. The first attempt at endoscopy was by means of hollow bone urethral tubes through which sunlight was admitted. The history of vesico-urethral endoscopy is given by Hurry Fenwick in his work entitled "The Electrical Illumination of the Bladder and Urethra," and I will endeavour to give a short abstract of his account of the evolution of the cystoscope and urethroscope.

The first period commenced in 1805 with the invention by Dr. Bozzini of an apparatus which he termed the light conductor. Although the instrument was condemned by the Medical Faculty of Vienna on the ground of insufficient illumination the idea was grasped by the profession and a long list of investigators added to the literature of the subject and attempted to improve the instruments for visual examination of the bladder and urethra. Thus John Fisher of Boston, in 1824, invented a hollow metal tube with a reflected light, Paul Ségalas, in 1826, demonstrated before the Academy of Science of Paris an improved urethro-vesical speculum, and many others suggested and carried out various modifications and improvements.

The second period was opened in 1853 by Desormeaux, who is called "the father of endoscopy." This surgeon brought before the Academy of Medicine at Paris the first practical endoscope, and did much to further the development of the science of endoscopy. In 1865 F. R. Cruise of Dublin[3] made an important improvement in the Desormeaux endoscope. This consisted in concentrating upon a reflector the edge of the flat flame from an ordinary paraffin lamp. The apparatus was provided with specula through which the light from the lamp was reflected to the parts to be examined. To prevent inconvenience from the great heat evolved by the powerful light, the lantern was made of mahogany. The cannula for the bladder resembled a coudé catheter, with a little window of glass at the angle to permit the transmission of light. Various improvements and modifications of this instrument were made, and Christopher Heath used it at the Lock Hospital in London and introduced it to the profession in England in 1866. Beyond certain changes in the reflection of the light from plane or concave mirrors, and in the source of light, the endoscope underwent but little modification until the commencement of the third, or electrical, period in 1879.

The modern cystoscope owes its success to the use of electric light. Bruck of Breslau, a dentist, in 1867, employed a platinum loop, maintained at a white heat by means of a galvanic current, as the source of light for examining the mouth, and even advocated electric light for examination of the rectum and bladder some years before Nitze had his instruments for the urethra, bladder, and larynx sufficiently advanced to be used on the living subject. The original Nitze cystoscope had many failings when it was entrusted to Leiter, the well-known instrument-maker of Vienna, who simplified and perfected the water-cooling arrangements and improved the light. The result was the famous Nitze-Leiter cystoscope of 1879. This instrument, which was at once hailed by medical men from all parts of the world as a great advance in diagnostic methods, had grave faults, which for a time caused it to fall into comparative disuse. It was made in the form of a bladder sound of No. 21 French catheter gauge, with a sharp elbow and a longish beak. Depending on the part of the bladder to be examined, the window was placed in the concavity of the elbow (for the neck, anterior wall and sides) or in the convexity (for the posterior wall and base). The beak carried the electric lamp, and the shaft contained the telescope, the water-cooling tubes, and the insulated wire from the battery to the lamp. The ocular end was furnished with tubes connected with a water reservoir, so that a continuous stream of cold water could be kept running to absorb the great heat emitted by the platinum loop when in action. The ocular end also had a grip or binding screw for the attachment of the connecting cords from the battery. The heat evolved by the platinum loop was so great that a water-cooling apparatus was absolutely indispensable. To obtain the necessary heating and illumination of the platinum wire, an equable, constant current of a certain intensity was necessary. This could only be obtained from a large and cumbersome battery, fitted with a rheostat. The ease with which the platinum loop fused, even in competent hands, required the frequent services of a skilled electrician. Sir Henry Thompson, while demonstrating its use on a patient at the Royal Medical and Chirurgical Society in 1880, said that the instrument "should be under the care of a person well versed in the use of galvanic apparatus, and competent to adjust, or repair if necessary, the very delicate details which formed the essential parts of this somewhat complicated but very complete instrument." In short, the instrument was too cumbersome, too complicated, too unreliable, and too costly to be of general service to the surgeon, and it failed to achieve immediate success.

The next great advance was when the Edison incandescent lamp replaced the platinum loop as a source of light, and the year 1887 marks an era of which the far-reaching importance can hardly be estimated. From this time onward the instrument was improved from time to time until at the present day it is reliable, almost fool-proof, easily portable, cool even after prolonged use, and highly efficient. Every part of the bladder can now be inspected, the ureters can be easily seen and catheterised, and operations of considerable magnitude can be carried out inside the bladder under direct vision, with the minimum of discomfort to the patient. Similarly, the entire urethra can be inspected and treated, the ejaculatory ducts may be catheterised, and various operations, such as the removal of prostatic obstruc-

tion, urethral polypi, impacted calculi, and foreign bodies can be carried out with very little risk.

Difficulties in Campbell's Time.

A young surgeon commencing practice to-day can have no conception of the difficulties that beset those of us who started practice with Robert Campbell in the diagnosis and treatment of urinary complaints. Stone in the bladder was sometimes, but by no means always, detected by the sound. If it was secreted in a diverticulum or lying behind an enlarged prostate or covered with a coating of muco-pus, it was often unsuspected and the patient's misery continued. Tumours of the bladder, innocent and malignant, could not be diagnosed correctly without open operation, and the connexion between bladder symptoms and a lesion in the kidney could only be assumed by the presence of pain or swelling in the loin. It was not at that time fully realised that, in a large proportion of cases, disease of the kidney might not manifest itself by pain or swelling or, at any rate, not until late in the history of the case. When pain or swelling indicated disease of one kidney, the methods of ascertaining the presence and efficiency of a second kidney were crude and often misleading. Before the cystoscope came into general use various methods were employed to obtain the urine separately from the two kidneys. In the following account of these methods I have drawn largely from the article by Schede in Bergmann's "System of Practical Surgery."[4]

Tuchman was the first to obtain the urine separately from the two kidneys. He succeeded in compressing one ureter at a time, the urine from the other being allowed to collect in the bladder, to be drawn off for separate examination. He employed an instrument constructed on the plan of a lithotrite, which when passed into the bladder was made to slip over the elevation surrounding the mouth of a ureter. The blades were then manipulated so as to compress the ureter. The method proved, as might be expected, very uncertain. Silberman proposed the introduction into the bladder, through a catheter, of a thin rubber bag which could be filled with mercury and used to obstruct each ureter separately. The instrument was never perfected. Weir proposed to compress one ureter temporarily by an instrument introduced into the rectum. Ebermann suggested that this compression should be effected by two blades, one passed into the bladder and the other into the rectum.

Other equally useless methods were tried and abandoned. Even after the invention of the catheterising cystoscope, which required considerable practice and dexterity, attempts continued to obtain the urine from each ureter separately by other methods. The principle adopted in these later attempts was to produce an artificial division of the bladder into halves, each half retaining temporarily the urine from the ureter of its own side. Harris, of Chicago, invented an instrument by means of which a longitudinal fold could be produced at the base of the bladder, so as to form a watershed between the openings of the ureters. A lever was passed into the rectum or vagina to produce this fold, and a double catheter was introduced into the bladder. The halves of this double catheter were separated, after introduction, so that each half drained its own side of the bladder. I have used this instrument, but I cannot say that I have found it very satisfactory.

Luys, of Paris, invented a suitably curved, catheter-like instrument across the concavity of which a band of thin rubber could be stretched by means of a chain, manipulated by a screw at the handle. When the instrument was in position the rubber septum was projected by tightening the chain, thus dividing the bladder into halves, the fluid from each half being received into a separate bottle. I have used this instrument many times but I have not been satisfied that admixture across the middle line could be entirely prevented. When the bladder contained blood, pus, or other abnormal material, uncontaminated specimens from the ureters could not, of course, be obtained.

A similar instrument was suggested by Guyon in 1902 and perfected by Cathelin. Through a slit in the convex side of a catheter-shaped instrument a fine spring could be projected. The spring was covered with a thin rubber bag. The septum thus formed could be made to fit accurately the posterior wall of the bladder. Two fine catheters were passed through eyes in the main instrument so as to emerge on either side of the septum. The fact that this instrument was invented in 1902 shows that the catheterising cystoscope had not yet come into general use.

It is said that Simon was the first to succeed in catheterising the ureters. This was done in the female. He dilated the urethra with specula until he could pass his finger into the bladder. He then felt, with his left forefinger, for the little swelling round the ureteral orifice and guided the catheter into the ureter. Pawlik, again in the female, located the position of the ureters by two grooves, seen in the vaginal wall with the patient in the knee-elbow position and the perineum drawn backwards. These grooves are sufficiently distinct to be used as guides for ureteral catheterisation through the urethra. It is said that Pawlik's method was, for a time, the best available and that many successes were obtained.

Howard Kelly[5] was the first to make a useful instrument by means of which the orifices of the ureters in the female could be exposed and catheterised. The method was published in 1893 and was a great advance on all former attempts. The urethra was dilated to accommodate a speculum and the bladder allowed to fill with air. The bladder was lighted by means of daylight or electric light, reflected from a concave frontal mirror. The method was widely employed until it was superseded by the much simpler one of catheterising the ureters through the cystoscope.

Once the principles of the cystoscope had become established, additions and improvements followed with great rapidity until in a few years it became a very efficient aid to diagnosis and treatment. As instrument-makers, Leiter in Vienna, Wappler in America, Löwenstein and Wolf in Berlin, and Collin and Drapier in France, deserve much credit for advances in the construction of the cystoscope.

Those who have grown up with the cystoscope can have no conception of the thrill experienced by one who, accustomed to the older methods of examination, was privileged for the first time to obtain a view of the interior of the healthy bladder by the new instrument. As he viewed the mucous membrane, with its delicate colouring and its beautiful arrangement of vessels, and watched the rhythmic movements of the ureteral orifices which from time to time drew themselves up and ejected a little stream of fluid from their open mouths and subsided gradually into the resting position, he felt that a great vista of opportunity had suddenly burst upon his astonished gaze. As time went on and he became familiar with the normal appearances, he was able to detect in cases of disease alterations in the colour, thickness, and texture of the mucous membrane, blurring and obliteration of the vessels, and changes at the ureteral orifices, the significance of which he had yet to learn. One of the most fascinating pictures with which he now becomes only too familiar is the papilloma, with its finger-shaped processes into which a delicate system of blood-vessels can be traced, forming one of the most beautiful objects in surgery. Stones in the bladder can now be seen with the utmost clearness, their colour, shape, size, position, and number accurately estimated, and even their chemical composition fairly correctly foretold. These and many other abnormalities of the bladder are now diagnosed with the utmost accuracy and precision, suggesting methods of treatment that would have been impossible a few years before.

In the same way the urethra can be examined in its entire length, the presence and degree of stricture determined, the verumontanum and the orifices of the ejaculatory ducts clearly seen, alterations in the colour, resilience and thickness of the mucous membrane definitely displayed, and the state of the ducts and crypts opening into the canal ascertained. To one accustomed to the clumsy methods of the past, such accuracy and refinement of diagnosis beget an enthusiasm impossible to describe. My own experiences when I was suddenly translated from the darkness of precystoscopic days to the light of modern urology, in 1906, were of the most thrilling description, and from this time forward, as new methods were developed and fresh fields discovered, a perennial series of adventures into the newly found paths of cystoscopy and urethroscopy kept me in comparative contentment during the early and lean years of my professional life.

Disease of the Kidneys Revealed by the Cystoscope.

When the cystoscope became sufficiently perfect and of real practical utility, urologists began to accumulate observations of great interest and importance, so that from visual inspection alone of the bladder and ureteral orifices conclusions of the greatest value could be drawn, not only on the state of the bladder but also on the condition of the kidneys. It was eminently satisfactory to be able to diagnose inflammation and ulceration, the presence of calculi, or other abnormalities of the bladder. But research did not stop here. By careful and repeated observation of the ureteral orifices, their movements and the character of the jets, the surgeon was in many cases able to hazard an opinion on the state of the kidneys. Hurry Fenwick was one of the most brilliant exponents of the art of careful and accurate observation and deduction. His work, entitled "The Value of Ureteric Meatoscopy in Obscure Diseases of the Kidney,"[7] published in 1903, will remain for all time a classic. In the preface he says: "It is not acknowledged—and by many the suggestion is even ridiculed in England—that an electric light illumination of the orifice of the ureter of the diseased kidney can render signal service to the operator. Not only is the bladder declared free from all cause of renal suffering, but the condition of the diseased kidney can be surmised, and the opposite kidney declared healthy or the reverse." Subsequent experience by competent observers has fully justified the claims made by Fenwick. There is no need in these days to labour the point. Every cystoscopist knows that disease of the kidney is very frequently represented in the bladder by easily recognisable changes at the ureteric orifice. In some cases the only objective sign of a disordered kidney is the emission of blood or pus from the orifice of the ureter, and it is well known that this may occur in the absence of pain or discomfort of any kind on the affected side.

The early cystoscope was not provided with a mechanism by means of which the bladder could be irrigated and the medium rendered clear with the instrument in position. This was accomplished more or less satisfactorily about the year 1888. About this time Brenner attempted to catheterise the ureters of females by passing a fine catheter through a tube in an instrument invented by him and made by Leiter of Vienna. He endeavoured to pass the catheter directly into the mouth of the ureter by shifting the whole instrument into a convenient position. In one female he succeeded, but failed in the male subject. Five years later James Brown, Young's predecessor at the Johns Hopkins Hospital, modified the Brenner instrument by passing a curved spring stylet into the ureteral catheter so as to give it the necessary curve for introduction into the ureter, and on June 9th, 1893, achieved the distinction of being the first to catheterise the ureter through the cystoscope in the male subject. Although Nitze was not the first to construct an instrument for ureteral catheterisation, he was the first to construct it on the right principle. In previous instruments the catheter emerged in the long axis of the cystoscope. This made it difficult to direct the catheter into the ureter. Nitze's instrument provided a tube which came off at an angle and directed the catheter towards the ureter when the cystoscope was in position. Casper, in 1895, remedied some of the defects of this instrument and provided means by which the angle at which the catheter emerged from the shaft of the cystoscope could be altered as required. Albarran, in 1897, made an important addition by providing a hinged lever, the position of which could be shifted from the horizontal to the vertical by a screw at the ocular end, thus altering at will the direction of the ureteral catheter. At first, cystoscopes were only provided with arrangements for catheterising one ureter at a time, but soon this was remedied and it was possible to catheterise both ureters simultaneously. It now only remained to improve the lenses, the lamp, and some minor details to render the instrument thoroughly practical and satisfactory for use in patients of either sex. Ureteral catheterisation through the cystoscope soon became a recognised method of diagnosis. This paved the way for the great strides which followed, especially in the treatment of unilateral affections of the kidney. The operation of nephrectomy, instead of being an exceedingly risky procedure, soon became one of the most satisfactory in the whole range of surgery. Allowing for the great improvement in surgical technique which followed the epoch-making work of Lister, a due amount of credit must be given to the attention which could now be paid to the condition of the presumably sound kidney by the ureteral catheter and other methods of investigation. In cases of renal pyuria and hæmaturia the ureteral catheter confirmed the diagnosis made by inspection of the efflux from the ureteral orifices, and in certain cases of albuminuria without pus or blood the condition was located to one kidney. More interesting still is the fact that the urine may be perfectly normal, as shown by chemical and microscopical examination, and yet a lesion may be demonstrated in one kidney by comparing the specific gravity of the specimens of urine taken simultaneously from the two kidneys. For instance, I have seen cases of aseptic renal calculus in which there was no demonstrable abnormality of the urine obtained from the bladder. In certain cases of tumour of the kidney I have seen the same phenomenon, and in hydronephrosis it occasionally happens that the urine, even that obtained by catheter from the affected side, is free from abnormal constituents. I have been interested for many years in the difference in specific gravity on the two sides in unilateral affections of the kidney.[8 9] Shortly, in a large proportion of cases there is an increased flow of urine of low specific gravity on the affected side. To this phenomenon I have applied the term unilateral diuresis. This sign will be found of great value in diagnosis, especially when the urine obtained from the bladder is normal. A difference of specific gravity on the two sides indicates alteration of function and suggests that the case should be further investigated.

It occasionally happens that for some reason it is impossible to catheterise the ureters through the cystoscope. The bladder may be extensively ulcerated or so irritable that enough fluid cannot be retained, or the medium may be so clouded by blood, pus, mucus, and debris that the ureteral orifices cannot be seen. Various methods to obtain urine from each kidney separately have been devised: Iversen, in 1887, suggested catheterising the ureters through the open bladder; Czerny and Braun employed a temporary fistula of the pelvis of the kidney; Pinner incised the kidney on its convex border, or opened the pelvis and passed a catheter into the ureter for 2 or 3 cm. Other equally unsatisfactory methods have been recommended from time to time. Apparently no one thought of the very obvious and simple method of catheterising the ureters just above

the brim of the pelvis, where they can easily be reached by an operation in the iliac region similar to that used for removal of the appendix. In September, 1923, I ventured on this method of approach in a case in which it was found impossible, from bladder irritability and bleeding, to catheterise the ureters. The ureters were exposed and a small incision was made in each to allow of the passage of a ureteral catheter towards the kidney. The small openings in the ureters were closed by fine catgut at the end of the observation and gave no further trouble.[10] It is very gratifying to find that this operation has been extensively adopted by other urologists.

Tests of Renal Function.

With the march of progress in aseptic technique and in the methods of diagnosis made possible by the cystoscope and ureteral catheter, operations on the kidneys and bladder began to multiply. Surgeons soon found that the kidneys, if at all diseased, were very sensitive to operative interference at any part of the urinary tract. The aid of the chemist, the physicist, the physiologist, and the pathologist was therefore invoked to enable them to assess the functional capacity of the kidney and, if this was found deficient, to take steps to restore it. Various tests of renal function were suggested and carried out, with results which have thoroughly justified the enormous amount of research which has been brought to bear on this problem in recent years. Time will not permit me to recount all the methods which have been employed, but a few may be mentioned.

Estimation of the total quantity of urea secreted in 24 hours has not proved very reliable, for the amount varies greatly even under normal conditions.

Koryani and his co-workers found that the determination of the freezing-points of the urine and the blood gave valuable indications of the work being done by the kidneys. The freezing-point varies, of course, with the molecular concentration of the fluid examined. This test is very complicated and has fallen into disuse.

Mering discovered that an artificial renal glycosuria was produced by the administration of phlorizin. Casper and Richter made use of this discovery to determine the function of the kidney by estimating the amount of sugar excreted after the subcutaneous injection of a given quantity of phlorizin.

Various dyes have been used to determine the kidney function. Methylene-blue and indigo-carmine have been long in use, and the latter is much employed even at the present time. Delay in the appearance of the dye, diminished depth of colour, and prolongation of the time necessary to eliminate the colour from the urine indicate reduction of the excretory power of the kidney. These dyes have also been extensively used to disclose the position of the ureteral orifice by the deep blue colour which they impart to the efflux (chromocystoscopy). In 1910 Geraghty and Rowntree[11] introduced the phenol-sulphone-phthalein test. This is a colour test of great accuracy, and is extensively used in America.

Accumulation of urea in the blood indicates deficient elimination by the kidneys. An estimation of the amount of blood-urea is, therefore, a test of kidney efficiency. The work of Folin and Denis, the American biochemists, so simplified the technique for accurate estimation of blood-urea that the determination soon became a routine measure in urological clinics.

For the past few years Maclean's urea-concentration test has been one of the favourites in this country. Calvert,[12] a graduate of our own medical school, has amplified this test by estimating the range of urea concentration, from the most dilute to the most concentrated, by suitable administration of fluids. Calvert's modification of Maclean's test is probably one of the best in use at the present time.

The diastatic test, the creatinin test, the chloride concentration test and many others are in general use, but time will not permit me to dwell on them.

Radiology.

The discovery of X rays by Rontgen in 1895 and the application of this discovery by Macintyre in 1896 to the diagnosis of renal calculi opened a new era in the study of urological complaints. Every year since, urology has benefited in some new way until, at the present time, it is not too much to say that radiography rivals the cystoscope in importance as a diagnostic measure. One of the first problems that confronted the urologist when shadows were first discovered in the region of the kidney, ureter, or bladder was to determine whether they were actually in the urinary tract or outside it. The opaque ureteral catheter and radiography settled the matter. Stereoscopic or antero-posterior and lateral radiograms defined accurately the position of the shadows relative to the opaque catheter and greatly facilitated the task of the surgeon. Another use of the opaque catheter is to locate foreign bodies lying in or near the urinary tract. In this way the position of bullets or fragments of shell in relation to the kidney or ureter can be accurately determined.[13]

The next great advance due to X rays was pyelography. In 1906 Voelker and von Lichtenberg[14] used collargol, which gives a shadow with X rays, to inject the pelvis of the kidney, and demonstrated its shape, size, and position. This substance was found to be unsatisfactory and various substitutes were tried, the most important of which was thorium. Since 1918, however, bromide and iodide of sodium have replaced former media, and of these iodide of sodium is most used. When a solution is introduced into the pelvis of the kidney, the ureter, or the bladder, or all three, beautiful shadows of the pelvis and calyces of the kidney, of the ureter, and of the bladder can be obtained. Alterations in shape, size and position, filling defects and diverticula can be demonstrated with the greatest clearness.

In the same way, by means of the urethroscope, the openings of the ejaculatory ducts may be localised and opaque media injected into the vesiculæ to obtain X ray evidence of their condition, and the urethra itself may be examined by filling it with the opaque medium. The diagnostic value of these examinations is daily becoming more universally recognised. Pyelography is especially valuable, and as experience accumulates the urologist becomes competent from a study of the pyelogram alone to form an opinion as to the condition of the kidney. He may thus be able to diagnose hydronephrosis, tumours, polycystic disease, tuberculosis and other affections of the kidney.

In this connexion may be mentioned a method of demonstrating the shape and size of the kidney introduced in 1921 by Corelli and Sordella and, independently, by Rosenstein. In a good X ray photograph the outline of the kidney can, of course, be seen, but if oxygen is introduced through a hollow needle into the perirenal tissues this outline is more clearly defined. The photographs thus produced are very striking and will no doubt be of service in diagnosis. Another method is to introduce the oxygen into the peritoneal cavity and take X ray photographs. The outline of the kidney after this procedure is seen much more clearly than in ordinary radiograms. The gas separates the kidney from the adjacent viscera, including the liver or spleen, and enables its shadow to be more easily recognised.

Another function of the cystoscope in diagnosis is intravesical photography. Nitze invented a camera with which he was able to take ten successive pictures of the interior of the bladder. I have experimented with a photographic cystoscope purchased in 1913 from Loewenstein of Berlin. I took a number of photographs with this instrument and obtained clear pictures of the orifices of the ureters, of the blood-vessels, and of calculi, but I could not get good definition of tumours, and inflammatory conditions

could not be satisfactorily shown. During the war I intended to make use of this cystoscope, but I found a far better delineator in the person of Mr. A. K. Maxwell, the well-known artist, who was working in France under the auspices of the Medical Research Committee. He produced some of the most beautiful coloured cystoscopic pictures ever published of gunshot wounds of the bladder.[15] His drawings of gunshot wounds of the kidney, many of them coloured, were of equal merit.[16]

The Cystoscope in Treatment.

For treatment and for operative work[17] the cystoscope and the urethroscope have proved equally valuable. Nitze invented many additions to the cystoscope, including forceps, cauteries, snares, and stone crushers. He devised an instrument with which he was able to snare a polypoid tumour and cauterise the pedicle. Casper, Lewis, Buerger, Beer, McCarthy, Caulk, Young and others have added many ingenious instruments for use with the cystoscope. With these it is possible to remove foreign bodies, fragments of stone, and specimens for pathological examination. Additions have also been devised to dilate or divide the orifices of the ureters, and to perform the operation of litholapaxy under the direction of the eye. Minor operations through the cystoscope and urethroscope are of daily occurrence. By the ureteral catheter the pelvis of the kidney may be drained and irrigated, and by the urethoscope applications may be made to the utricle and, by means of a syringe and special cannulæ, the ejaculatory ducts may be catheterised and injections made, for therapeutic purposes, into the ampullæ and seminal vesicles.

The Use of Diathermy and Radium in Urology.

In 1910 Beer[18] revolutionised the treatment of papilloma of the bladder by the use of the high-frequency current applied through the cystoscope. With the improved apparatus now at our disposal even multiple papillomata can be efficiently treated while the patient walks about and carries on his ordinary vocation. The advantages of this highly important discovery lie not only in the comfort and safety with which the treatment can be carried out, but also in the fact that a recurrence can be dealt with at the earliest possible moment without damage to the urethra, the abdominal wall, or any other part. The current is applied through a platinum-tipped ureteral catheter, and it is one of the thrills of surgery to see the leaves of the papilloma crumple up like singed feathers when the charged electrode is brought into contact with them.

For malignant tumours of the bladder, treatment by diathermy is only rarely applicable, but modern surgery has so progressed that it is possible to remove half, three-quarters, or even more of the bladder, together with the infected lymph channels and glands, the remaining portion expanding in a few months to accommodate itself to the altered conditions. Other uses of diathermy are to enlarge the ureteric orifice to allow of the passage of a calculus, and to treat resistant ulcers in the bladder, such as those due to tuberculosis.

The discovery of radium in 1898 by Professor and Madame Curie opened up another fruitful field in the therapeutics of urology, but it was not, I think, until 1911[19] that results began to be published. Since that time many ingenious instruments have been devised by means of which, through the cystoscope, radium in the form of emanation seeds or element in small needles can be placed in any part of the bladder for the cure of simple papillomata or malignant growth. At the Johns Hopkins Hospital, in which the first practical application of this method was made in 1914, many hundreds of cases have been treated, with results which show that radium applied through the cystoscope is one of the most important and successful methods at our disposal for dealing with tumours of the bladder.

Nephrotomy and Prostatectomy.

The treatment of renal calculi by modern methods is another of the triumphs of surgery. Sir Benjamin Brodie, writing in 1842,[20] says: "Some of the old surgeons have spoken of an operation for the extraction of calculi from the kidney. The proposal is absurd and dangerous." To-day the operation is almost without mortality if done before the calculi are allowed to block the ureter or to grow to such dimensions that extensive nephrotomies are required to release them.

Prostatectomy has proved a priceless boon to a large section of men who have passed the prime of life. Before the days of prostatectomy the condition of some of these patients was pitiable in the extreme, and many of them were willing to submit to any procedure, however drastic, that held out any prospect of relief. Partial prostatectomy, by the suprapubic route, was performed by surgeons long before complete enucleation was thought of. Amussat in 1827, Dittel in 1885, Belfield in 1886, and McGill in 1888 paved the way for the modern operation, which appears to have been first performed by Eugene Fuller of New York in 1894. P. J. Freyer undoubtedly first launched the operation in England in 1901 and by his strong personality and strenuous advocacy, combined with his own remarkably low rate of mortality, established it on a sound practical basis. Freyer must, therefore, be considered a pioneer in the operative treatment of prostatic hypertrophy.

Perineal prostatectomy was similarly foreshadowed by attempts at removal of portions of the gland at different times, commencing with Covillard who, in 1639, appears to have torn away a portion of the prostate after perineal lithotomy. Sir William Ferguson in 1849, Billroth in 1867, and others followed but, according to Young,[21] Goodfellow, who performed the operation in 1891, deserves the credit of being the first to make a success of it.

The French school, represented by Proust and Albarran, exposed the prostate in the perineum and excised it piecemeal, but the operation of conservative perineal prostatectomy was finally developed in 1903 by Young of Baltimore, who still remains its most brilliant exponent. Young has also invented a cautery punch for cases in which the obstruction is due to a median prostatic bar. By this instrument the obstruction can be removed without disturbing the lateral lobes of the gland. The operation is an endo-urethral one, and has been carried out in a large series of cases with remarkably good results.

Finally, mention must be made of the endo-urethral method developed by Georges Luys of Paris in 1914.[22] His method, "forage de la prostate," consists in removing through the urethroscope, by means of the galvano-cautery or by diathermy, those portions of the prostate which obstruct the outflow of urine. If the results claimed by Luys are obtained by other surgeons, this method of treatment should become a useful addition to the resources of the urologist.

The mortality records of Freyer, Young, Thomson-Walker and other well-known urologists are so good that it would seem almost presumptuous to suggest any improvement in technique, but I have felt for some time that the comfort of the patient might be increased and the incidence of sepsis diminished by a combination of the suprapubic and the perineal operative routes: removal of the prostate by the suprapubic and drainage by the perineal. By this means a continuous stream of fluid can be maintained through the bladder and the patient kept dry during his convalescence. An account of this method, which is at present on its trial at this medical school, has recently been published.[23]

A great medical school is not built up in a day, nor is it given to any one individual to be an outstanding factor in its development, but there are certain men who, by their ability, their foresight, their devotion, their industry, their unselfishness, and their personality, make a lasting impression on

its progress. We recall with pride the names of such men as Thomas Andrews, Alexander Gordon, Peter Redfern, James Cuming, W. A. McKeown, Johnston Symington and others, who played no small part in building up the reputation of the Belfast medical school. No one will deny to Robert Campbell the right to stand as a peer among these great men who, in spite of many obstacles, materially advanced our standing as a centre of medical education. With men of the stamp of Robert Campbell to represent us in the world of medical science, the future of our medical school is secure.

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OBSERVATIONS ON THE BRUIT D'AIRAIN (COIN SOUND, BELL SOUND).

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THE *bruit d'airain*, or, as it is commonly called in this country, the coin sound, is the most distinctive and the least understood of the pulmonary acoustic phenomena. It can be heard only when an air-containing cavity (a pneumothorax, a pulmonary cavity, and very rarely a pneumo-pericardium) is present in the thorax. The sign is not constantly obtained in pneumothorax, even when complete collapse of the lung exists. That is to say, the presence of the bruit d'airain is diagnostic of an air-containing cavity, but conversely the absence of the sign does not exclude the presence of such cavity. It was this fact which led to the study of the present series of cases in order to determine if possible the physical or pathological factors governing the incidence of the sign.

It will be convenient at the outset to state or re-state the following facts concerning the bruit d'airain, about which fairly widespread misconceptions have arisen since its original description.

1. The bruit d'airain is one of a group of metallic phenomena which may be heard in the thorax under varying conditions. The other members of the group are: (*a*) amphoric breath sounds; (*b*) metallic vocal resonance, either of the whispered or spoken voice; (*c*) metallic or tinkling crepitations; and (*d*) the (Hippocratic) succussion splash. All these signs are associated with the presence of an air cavity or cavities in the chest. For the production of tinkling crepitations and the succussion splash, fluid or secretion is a necessary additional factor.

2. The bruit d'airain is a clear ringing musical note exactly like that made by striking a sharp blow on a brass vessel (French: *airain* = brass), and it is elicited by listening over the anterior or posterior wall of the chest while an assistant percusses or taps two coins together on the same or opposite wall. Although it is more convenient to use two coins it must be emphasised that the note produced by two pieces of wood, or by simple digital precussion, is of exactly the same musical pitch and quality as that produced by percussion with coins, whether gold, silver, or copper.

3. Over some pneumothorax cavities a dull, wooden, non-musical note is sometimes heard. To this sound the term *bruit de bois* has been given by French clinicians.

4. In some cases of hydropneumothorax the bruit d'airain may be obtained over the air space down to the level of the fluid, but over the fluid itself a higher pitched, fainter, silvery note may occasionally be heard. To this is given the name of the *signe de Pitres* or the *signe de sou*, described by Sieur [1] in a Thèse de Paris in 1883.

Historical.

Laënnec,[2] in his "Traité de Médiate Auscultate," gave an excellent description of the physical signs of pneumothorax with the exception of the bruit d'airain. This sign was first described in April, 1857, in an anonymous paper [3] entitled "Pneumothorax—nouveau signe pathognomique de cette affection." The writer reported a case of pneumothorax and said that a sign was present which had been discovered and reported several years before by A. Trousseau. It was obtained by auscultatory percussion, and the resulting sound was so intense as to hurt the ear, resembling the note given out by a brass vessel when struck sharply. He further stated that the sound was pathognomonic of air in the pleural cavity. Boursot,[4] in 1883, dealt with the bruit d'airain, and concluded that one of the most important signs of pneumothorax is the sound elicited by the combined percussion and auscultation of the anterior region of the chest. Harris,[5] in St. Bartholomew's Hospital Reports of 1887, reports five cases of spontaneous pneumothorax, and makes the following note about the bell sound:—

> "In conclusion I may remark that in my experience the bell sound is generally absent *at first*, and that it is then generally heard over wide areas. Later on the sound becomes more localised in extent and can only be heard on very careful and minute percussion with coins over the whole chest. Not infrequently, however, the bell sound may be replaced as the case progresses by some less clear sound, which is exactly like that made by a hammer striking an anvil. I do not know whether this sound has previously received such a name but I always call it the anvil sound."

In 1896 Chauffard [6] reported a case of left-sided pneumothorax following a violent movement of the left arm. The patient was admitted to hospital on the fifth day after the onset. No fluid was present. The whole chest was tympanitic with the absence of the respiratory murmur and vocal fremitus. No metallic phenomena, no tinkling, and no succussion splash were present, *but a splendid bell sound was obtained*. Hoover,[7] in 1898, considered that the coin sound depended, not on the tension of the gas, but on the tension of the walls of the cavity. In 1895 Osler [8] reported a case of chronic tuberculosis with a large cavity in the right upper lobe, with thickened, adherent pleura. In this patient during life the coin sound was heard with great intensity. Until this time the general idea was that the sign was distinctive of pneumothorax.

Emerson,[9] in his masterly and exhaustive monograph on pneumothorax in 1903, reports 48 cases, and in his section on the coin sound remarked that "it should be borne in mind that for the sound of the tap of the coins to be very clearly transmitted does not make the sign positive. The amphoric quality

furnished by a resonant cavity is necessary." Unfortunately, in his analysis of cases he does not give his opinion as to why the coin sound was heard in some cases and not in others. Owing, however, to the full notes made on each case, we have been able to determine the type of case in which the coin sound was present or absent in his series.

Our analysis shows that 28 of these cases were investigated for the presence or absence of the bruit d'airain. The sign was present in 22 cases, suggestive in 2, and absent in 5. Fifteen out of the 22 positive cases were examples of pyopheumothorax, 5 of them were hydropneumothoraces and 2 were cases of pneumothorax. Of these two cases one was a case of pneumothorax of 12 years' standing without lung expansion. The other was a case of pure pneumothorax in which the bruit d'airain was heard. Of the cases not giving the sign, one was a case of pure pneumothorax and four were pyopneumothoraces before aspiration. No note was made on the bruit d'airain after aspiration.

F. T. Lord,[10] in Osler and McCrae's "Modern Medicine," remarks that the coin sound like amphoric breathing is probably due to the peculiar resonating qualities of the pneumothorax cavity. Fishberg [11] is of the opinion that the coin sound is due to the presence of fluid in the pneumothorax cavity.

Pratt and Bushnell [12] state that "the cavity of the pneumothorax acting as a resonator reinforces the metallic sounds as overtones of its fundamental note, and since the thoracic wall vibrates as a part of the resonator, the sound is heard by the ear, as it were, at the very place of its production." It is clear that this theory is based on the erroneous assumption that coins are necessary for the production of the coin sound. The remarks of Powell and Hartley [13] seem to have been influenced by the same idea.

The Italian physicians have paid considerable attention to the acoustic phenomena of pneumothorax cavity. Morelli [14] and Moron [15] stated that the bruit d'airain is more marked when the intrapleural tension is high. Cesare Minerbi [16] in a series of studies during 1913–14 pointed out that the necessary conditions for the production of the bruit d'airain are: (1) the cavity must be of sufficient volume; (2) the mediastinal and thoracic walls of the cavity must be sufficiently tense; and (3) that the shape of the cavity must be more or less regular.

In a further interesting series of studies, Minerbi. Mongoni, and Benassi [17] showed that in cases of complete therapeutic pneumothorax where the bruit d'airain was present two distinct tones were invariably found,* one a higher pitched tone corresponding to the extreme points of the diameter extending fromthe interscapular vertebral space to the base of the mediastinum, and a lower tone corresponding to a line joining the apex of the hemithorax to the costal margin—i.e., a high note corresponding to the short transverse diameter of the cavity, and a lower note corresponding to the longer vertical diameter. They also said that these two sounds were only obtained when the intrapleural pressure reached a level between zero and +1 of the water manometer—i.e., a slight positive pressure. Another observation which they made was that in the first 24 hours after re-establishing the pressure in an already complete pneumothorax the bruit d'airain cannot be obtained, even if a positive intrapleural pressure exists.

In a report by one of us (McL) [18] of a case of simultaneous bilateral artificial pneumothorax in which it was possible to study in the same patient the bruit d'airain in two pneumothorax cavities, in only one of which a pleural effusion had occurred, the statement was made that the bruit d'airain or coin sound is elicited in its most marked and characteristic form when the pleura has been thickened or sclerosed by the onset and subsequent absorption of a pleural effusion, either serous or purulent; further, that the main condition for its production, apart from the presence of an air-containing cavity in the thorax, was the hardening and increased elasticity of the wall of the cavity and not the tension in the cavity or the presence of a certain amount of fluid, as other observers had stated.

* In an annotation in THE LANCET (1927, ii., 981) it was stated that in all their cases of complete pneumothorax the bruit d'airain was found. On reading the monograph we find that this is not so. Only those cases in which the bruit d'airain was present were selected for experiment.

Analysis of Cases.

The cases examined in this series were 50 in number, of which 26 were males and 24 females. Artificial pneumothorax was induced on the right side in 28 cases and on the left in 24. In two cases a pneumothorax was induced simultaneously on both sides.

These cases were examined over a period of two years for the presence or absence of the bruit d'airain in relation to varying conditions, such as the development of pleural effusion, the condition of the walls of the cavity, intrapleural tension, selective collapse of the lung, hydropneumothorax, mediastinal displacement, and ballooning of the pleura. The sign has been investigated in all stages of lung collapse ranging from just after induction, when the air space in the pleural cavity is small, to the period of complete collapse of the lung. Each case was examined on many occasions for the presence or absence of the sign, and it should be noted that at certain stages and under varying conditions in the same cases the bruit d'airain was present at times and absent on other occasions. But in general of the 50 cases, two of which had simultaneous bilateral pneumothorax, the bruit d'airain was present at one stage or another over 28 pneumothorax cavities and in the other 24 it was absent in all stages.

On considering the 28 cases in which the bruit d'airain was heard, it was found that 23 developed pleural effusion during the course of the artificial pneumothorax. Of the remaining five, Case 1 had a previous history of a fibrinous pleurisy and showed signs of a rigid pleura (estimated by the resistance to the pneumothorax needle and by rapid increase of intrapleural pressure during a refill) with bronchiectasis at the left base. Case 7 developed an acute fibrinous pleurisy during the course of pneumothorax treatment. Case 15 showed clinical and radiological evidence of a mediastinal bulge. At this time the bruit d'airain was present but was not heard when the mediastinum returned to the normal position, although the lung was still collapsed. Case 27 did not have a pleural effusion during the course of artificial pneumothorax. A faint bruit d'airain was heard during a period of ballooning of the pleura. This patient also had dense consolidation of the underlying lung. She went to a sanatorium and no further notes are available on the incidence of the bruit d'airain in her case. Case 21 after a refill developed pleural pain which may reasonably be believed to have been acute fibrinous pleurisy. Following this a beautiful bruit d'airain was obtained all over the cavity and was still present two months later.

It is a remarkable fact that in the 24 cases in which no bruit d'airain was ever heard there was no incidence of pleural effusion or fibrinous pleurisy, either before or during the course of treatment. In the majority of these the lung showed good collapse, and in some cases complete collapse.

Pre-effusion Bruit d'Airain.

In four of the series the development of the bruit d'airain in cases where it had not been heard before led to investigation for signs of pleural effusion. In all four cases an effusion subsequently developed.

CASE 12.—The bruit d'airain was present for the first time on Jan. 19th, 1928, after the pneumothorax had been established for eight months. There was no clinical evidence of pleural effusion. On Feb. 23rd fluid was found up to the level of the eighth dorsal spine. On referring to the notes of the intrapleural pressures, we find that on Dec. 19th, 1927, the pressure before a refill was −6 ±0. 525 c.cm. of air were injected and the final pressure was ±0 +6. On Jan. 19th, 1928, the day on which the bruit d'airain was first heard, the initial pressure was −2 +5. 300 c.cm. of air were injected, making the final pressure +8 +16. The sudden increase in intrapleural pressure when only 300 c.cm.

of air were injected seems to be strong evidence that the pleural membrane was hardened and more rigid than normal.

CASES 13, 31, 44 presented the same features as Case 12.

As an explanation of this pre-effusion bruit d'airain we would suggest that the inflamed pleura is in a hyperæmic and turgid state making the walls of the pneumothorax cavity harder and more rigid. This point is illustrated above in the note on intrapleural pressures in Case 12. It would seem, therefore, that the most favourable factor necessary for the production of the bruit d'airain (as we hope to show later) is present in these cases. The shape and volume of the cavity, the actual presence of the fluid, or increased intrapleural tension do not apparently influence the incidence of the sign. It will be noted, especially in Case 12, that the bruit was present (1) when the intrapleural tension was negative (before the refill); and (2) before pleural effusion had occurred.

Post-effusion Bruit d'Airain.

Repeated examinations of the cases which developed an effusion into the pneumothorax showed that in general the bruit d'airain became more intense as the effusion absorbed and as the pleural membrane became drier and more rigid. This was the most common finding in the majority of cases. In a few, of which Case 2 is an example, the fluid was absorbed fairly rapidly without aspiration. In these cases it was found that the bruit d'airain reached its maximum intensity about four months after the onset of the effusion.

CASE 2.—A girl, aged 20, with a left-sided pneumothorax induced on Oct. 25th, 1926, developed an effusion into the pneumothorax cavity on May 20th, 1927. The bruit d'airain was heard in its maximum intensity on or about Sept. 19th, 1927, when the pneumothorax cavity was dry, and the pleura on puncture with the needle was found to be tense and resistant.

In many cases no bruit d'airain was to be heard until the onset of effusion. Four cases illustrating this point are quoted above. When once the effusion was established the bruit d'airain disappeared, only to reappear perhaps faintly as the effusion cleared, but finally as the pleura became rigid and dry the note became more musical and was heard over a larger area.

CASE 3 was that of a man aged 47. Artificial pneumothorax was induced on the right side on Sept. 9th, 1926. Pneumothorax was well established in one month with fairly complete collapse. A small adhesion was present at the extreme apex. On Jan. 18th, 1927 (three months after induction), a radiogram showed that the apex remained collapsed while the lower lobe had almost completely expanded (illustrating the doctrine of selective collapse). One week later he became ill, and developed an aspiration broncho-pneumonia in the right lower lobe. Until April 8th, 1927, no bruit d'airain had been elicited over the pneumothorax cavity. On this date, however, a slight bruit d'airain was heard at the right base. No succussion splash or other signs of effusion could be detected at this time. On May 10th, 1927, the slight bruit d'airain having persisted, a small effusion was discovered at the right base. The effusion did not increase appreciably in amount for some months. Sometimes it appeared that the fluid had been absorbed but it began to reaccumulate in somewhat larger quantities until on April 17th, 1928, one and a half pints of fluid were aspirated and replaced by air. It was noted during the whole of this time of intermittent effusion that the bruit d'airain began to increase gradually in intensity until on May 15th, 1928, a perfect bruit d'airain was heard all over the cavity. At the time of writing a small effusion still exists and an excellent bruit d'airain is heard down to the level of the effusion. The question of the relationship between the incidence of the bruit d'airain and the intrapleural pressures in this case will be discussed later.

Bruit d'Airain in Bilateral Pneumothorax.

Case 20, which has already been reported in THE LANCET,[18] was one in which a girl, aged 17, had simultaneous bilateral pneumothorax induced. The case is of value in relation to the bruit d'airain on account of the fact that in the same patient two pneumothorax cavities were present, in only one of which pleural effusion occurred. The left pneumothorax cavity remained dry throughout the whole period of collapse. On the right side an effusion developed early. The fluid was aspirated and replaced with air three weeks later. Repeated examinations showed that the bruit d'airain developed on the right side two months after the aspiration and became more intense and musical as the pleura became drier and more rigid. The bruit d'airain persisted until the lung was allowed to re-expand one year later. It was present until the cavity became very small—i.e., it could be heard over a partial pneumothorax. On the left side, although the amount of collapse was equal to that on the right side and was more regular, the bruit d'airain was never heard.

Case 40, a man aged 23, in whom bilateral pneumothorax was present, showed the same features as Case 20.

Relationship between Intrapleural Tension and the Incidence of the Bruit d'Airain.

Most observers attribute the fact of the presence or absence of the bruit d'airain to either a negative or a positive intrapleural tension. Widal[19] seems to be in a position of splendid isolation when he stated that the sign was absent when the tension was high and present when the tension diminished. Béclère[20] in 1897 stated that the bruit d'airain was accentuated when the intrapleural tension is increased. Bendove[21] in 1926 found that the bruit d'airain was present in all cases of pneumothorax, whether open or closed, in which the pressure was at atmospheric or above, regardless of the size of the pneumothorax cavity. Although radiograms and histories of illustrative cases indicate that the pleura was thickened in those patients in whom the bruit d'airain was found, Bendove does not mention this as a factor in the production of the sign.

Reference to this series of cases shows that if certain factors are favourable the bruit d'airain is found, whether the intrapleural tension is negative or positive. In many cases before a refill a beautiful bruit d'airain was elicited and on insertion of the pneumothorax needle the intrapleural pressure was found to be negative, e.g., −8 −2. On raising the pressure by injection of air to a positive figure, little alteration was found in the intensity or character of the bruit d'airain. This feature was so constant that the theories stating that a positive intrapleural pressure must be present before a bruit d'airain can be elicited can be dismissed as erroneous.

Reference to the table will illustrate this point.

Case.	Intrapleural tension before fill.	Amount of refill.	Intrapleural tension after fill.	Presence of bruit d'airain.
		c.cm.		
3	−11 −3	400	+10 +16	Present before and not altered
	− 9 −0	250	+ 5 +11	by refill.
4	− 6 +1	375	+ 4 +12	Present before and after refill.
	−10 −3	600	− 3 − 4	Present before—more intense at base after refill.
7	− 8 +1	600	− 4 + 6	Faint before—more marked after.
	− 8 ±0	200	+ 8 +16	Present before—more intense after.
8	−14 +2	200	+10 +20	Present all over before and only
	− 9 −1	550	− 3 + 5	over upper zone after.
31	− 5 −1	500	0 + 3	Present before—duller after fill.
	− 5 +1	350	+ 1 + 7	Present all over before—duller and practically absent after fill.
38	−11 −1	750	− 1 + 6	Present before and after fill.
40	−21 −7	500	+ 1 + 9	Present before and after refill.
42	−19 −5	600	− 4 + 4	Ditto.
44	−13 −5	300	− 8 + 1	Ditto.

Cases 2, 5, 6, 12, 17, 18, 42 illustrated similar phenomena fully represented by Case 3.

It will be seen that in many cases a bruit d'airain was heard when the intrapleural pressure was negative

(see Cases 38–44). In some instances the bruit d'airain was heard better after the refill, as in Case 4. It will be noticed, however, that even the final intrapleural pressure was negative. In Case 7 the bruit d'airain was heard better after the fill when the intrapleural pressure became positive. These cases are in the minority and the improvement in the bruit d'airain can be ascribed to other factors such as the increase in the volume of the pneumothorax cavity.

Relationship of Bruit d'Airain to the Size and Volume of the Pneumothorax Cavity.

After the induction of an artificial pneumothorax the shape alters and the volume of the cavity gradually increases until, if no adhesions are present, complete collapse is obtained. If the pleural membrane retains its normal thickness and resilience, and neither mediastinal displacement nor ballooning of the pleura occurs, no bruit d'airain is obtained. This is well shown in Cases 22 and 24, in which collapse was induced in a normal lung for the purpose of transpleural operation on a carcinoma of the œsophagus.

Variations in the shape and volume of the cavity depend on several factors :—

1. *Presence of pleural adhesions.*—A firm adhesion in any situation will prevent the uniform collapse of the lung and hence the production of a regular cavity. The situations of adhesions may be : (*a*) apical, (*b*) mid-zonal, (*c*) basal. For instance, in this series of cases 15 had a free pleura with no adhesions, 17 had apical adhesions, 3 had mid-zonal, 3 had basal, and 2 cases showed both apical and basal adhesions. On the remaining six cases no notes as to the presence of adhesions were made. In some instances the adhesions stretched into long ribbon-like structures and did not prevent the even collapse of the lung. In other cases broad, sheet-like adhesions prevented even collapse of the lung and thus altered the shape of the pneumothorax cavity. It is in these cases that breath sounds are well heard locally over the site of the adhesions. Presence of adhesions per se did not appear to have any appreciable influence on the bruit d'airain, except in so far as their presence rendered the patient more liable to the onset of pleural inflammation and subsequent effusion. Apical or basal adhesions, while diminishing slightly the size of the cavity, did not prevent the formation of a fairly regular pneumothorax. Cases in which adhesions did play a definite part in the disappearance of the bruit d'airain were those in which an obliterative pleurisy developed.

2. *Selective collapse.*—The pneumothorax cavity is sometimes altered in shape by the fact that the diseased areas of lung tissue tend to remain collapsed whilst the healthy areas re-expand. In this series of cases where there was radiological evidence of selective collapse no bruit d'airain was heard. In cases which had a pleural effusion this phenomenon of selective collapse was never seen after the effusion had cleared. The explanation seems to be that the whole pleura is thickened as a result of past inflammation sufficient to prevent the re-expansion of the underlying healthy lung. In those cases which never had an effusion, the pleura, being normally elastic, did not prevent re-expansion of the lung. The absence of the bruit d'airain in these cases of selective collapse might be due to irregularity of the pneumothorax cavity. Further reference, however, to these cases shows that when the lung was evenly collapsed by a further injection of air, the bruit d'airain was still absent. This point was well illustrated in Cases 3 and 45. The explanation of the absence of the bruit d'airain seems to lie rather in the fact that the pleura was not thickened and the shape of the cavity played little or no part.

3. *Hydropneumothorax.*—The presence of an effusion into an artificial pneumothorax cavity definitely alters its shape and lessens the volume. If the cavity is completely or almost filled with fluid the bruit d'airain is not found owing to obliteration of the air cavity. If the fluid occupies about a half of the pneumothorax cavity a good bruit d'airain is usually heard above the level of the fluid. In a few cases the signe de Pitres was obtained over the fluid. This, however, was not constantly observed. Biermer's [22] " change of sound " was found in those cases in which there was a moderate effusion and a fairly complete pneumothorax. The sign consists in an alteration of the pitch of the bruit d'airain when the patient is examined both in the horizontal and upright positions.

4. *Mediastinal displacement and ballooning of the pleura.*—These conditions are sometimes produced during the course of establishment of an artificial pneumothorax by the too rapid compression of the lung. A patient with a lax mediastinum is especially liable to these complications. In displacement, the whole of the mediastinum is displaced to the opposite side and in the other case the pleural reflection is ballooned across the mediastinum without there being much displacement of the mediastinum itself. In both conditions the shape and volume of the pneumothorax cavity is definitely altered. A faint bruit d'airain or a bruit de bois is occasionally heard over the base of the pneumothorax in cases with mediastinal displacement. The sign is obtained even in cases with no evidence of pleural thickening. Again, when there is ballooning of the pleura with either a negative or positive intrapleural pressure a faint bruit d'airain or sometimes a bruit de bois may be elicited over the pleural hernia, definitely outlining the shape of the bulge.

CASE 16 was an instance of right-sided pneumothorax in which there was a complete pneumothorax without adhesions or thickening of the pleura. During a period when there was over-displacement of the mediastinum a faint bruit d'airain was heard over the right base. When, however, the mediastinum returned to its normal position, the lung still remaining collapsed, the faint bruit d'airain disappeared.

CASE 27 was an example of partial pneumothorax in which there was ballooning of the pleura but no mediastinal displacement. Over the pleural hernia a faint bruit d'airain was found outlining the curved shape of the distended pleural reflection. When this distension was allowed to contract the bruit d'airain disappeared and was not obtained again up to the time the patient left for sanatorium treatment.

Relationship between Bruit d'Airain and the State of the Cavity Walls.

Thickening and rigidity of the cavity walls most commonly follows purulent or serous effusion into the cavity. Less commonly it results from an acute fibrinous pleurisy, and also from involvement of the pleura over a diseased area in the lung. Consolidation of the lung itself in some cases may cause rigidity of the walls. Temporary rigidity may be caused by an acute inflammatory process in the pleura occurring before the onset of an effusion. In all our cases in which rigidity of the cavity wall was present, bruit d'airain, either localised or generalised, was heard. This constitutes the main point of our thesis.

Relationship between the Bruit d'Airain and the Other Metallic Phenomena.

In some of our cases the metallic phenomena (bruit d'airain, amphoric breath sounds, metallic vocal resonance, tinkling crepitations, and the succussion splash) were heard at one time or another. Sometimes all five signs would be heard in the one case, as, for example, in Case 3, in which there was a consolidated, partially collapsed lung associated with hydropneumothorax. In such a case it was noticed that all the signs possessed the same note in the musical scale, and that the quality or timbre of each note was identical.

In a dry pneumothorax cavity, with the lung completely collapsed and the pleura hardened, the bruit d'airain was the only metallic phenomenon to be heard. If a collection of fluid was present in the pneumothorax cavity, the succussion splash as well as the bruit d'airain was elicited. Amphoric breath sounds were heard : (1) when the lung was partially

collapsed with an area of consolidation around one of the bronchi ; (2) when an uncollapsed pulmonary cavity was present ; and (3) when a broncho-pleural fistula had formed. In no case were amphoric breath sounds heard in the absence of the bruit d'airain. Further, if the amphoric breath sounds were faint and distant or loud and echoing the bruit d'airain possessed similar characteristics. When in addition secretion was present in the lung tinkling crepitations were heard.

In regard to the significance of amphoric breath sounds over a pneumothorax cavity, we are unable to agree with Bendove who regards them as indicating a broncho-pleural fistula in every case. We are convinced that in certain cases amphoric breath sounds are those that would normally be heard as bronchial breath sounds in a consolidated lung or over a pulmonary cavity, with a musical quality imparted to them by an adjacent air-cavity. Again, although tinkling crepitations may in some instances be due to air bubbling up through fluid from a submerged fistula, as some observers state, we are inclined to agree with James,[23] Gerhardt,[24] and Kinghorn,[25] that they are in many cases ordinary crepitations modified by the resonating musical qualities of the adjacent pneumothorax cavity. Tinkling crepitations may also be produced in a pulmonary cavity when its volume and the rigidity of its walls are favourable.

The presence of tinkling crepitations and amphoric breath sounds over a pneumothorax cavity in our experience indicates that the collapse of the lung is incomplete. The bruit d'airain may be heard whether the collapse is complete or partial.

Localised Bruit d'Airain.

In many cases of partial collapse the bruit d'airain was heard only over the base of the cavity, occasionally over the upper zone, and in rare cases over the mid-zone, depending primarily on the situation of the air space. In one case of basal bronchiectasis with complete collapse the bruit d'airain was heard only over the base, presumably because the two layers of the pleura and the lung were thickened only in the lower region. As stated elsewhere, a faint bruit d'airain was also heard at the base in those cases where mediastinal displacement was present.

Discussion.

The term "coin sound" as a synonym for the "bruit d'airain" is misleading and should not be used. It has given rise to the misconception that the clear ringing note obtained is due to amplification of the metallic sounds. "Bell sound" is a better term because its use does not infer that the use of coins is necessary in the production of the sign. It seems best, however, to keep to the original term "bruit d'airain," which was originally described as a phenomenon to be elicited by auscultatory percussion.

The sign, whatever method is used to set up vibrations in the pneumothorax cavity, is a musical note of constant pitch and quality. Each cavity has its proper note—that is to say, that the bruit d'airain is inherent in the cavity and not in the method used to elicit the sign. A further interesting fact is that in some cases all or some of the following signs may be heard—succussion splash, tinkling crepitations, amphoric breath sounds, and the bruit d'airain—and in each case the fundamental musical note is the same for all these signs. The presence or absence of the bruit d'airain depends on many factors which are as yet imperfectly understood. But as a result of the prolonged study of these cases we have been able to establish factors which play an important part. The most important appears to us to be: (1) *The condition of the wall of the cavity*—namely, that the wall should be sclerosed and rigid, a state of affairs which most commonly results from the onset of a pleural effusion into the pneumothorax cavity. If the effusion is absorbed or is replaced by air, the drying and hardening of the pleura, accompanied by a beautiful bruit d'airain, reaches its maximum about four months after the onset of the effusion. From this time the sign persists in similar intensity until the lung is allowed to expand. The hardening of the walls of the cavity can also be ascribed, although less frequently, to pleurisy occurring before the induction of the pneumothorax, to consolidation of the underlying lung, and to acute fibrinous pleurisy occurring during the course of the pneumothorax. (2) *The size or volume of the cavity* is of moderate although not of paramount importance. The bruit d'airain, if present at all, is heard over an area of the chest wall usually in proportion to the amount of collapse. It was noted in a fair number of our cases that the sign was present over the base, probably owing to the fact that the volume of the pneumothorax was greater in that situation. But if the pleural membrane is hardened the bruit d'airain can be heard even over a small cavity. Conversely, if the pleura is not hardened, and the volume of the pneumothorax large, the bruit d'airain is in the majority of cases not elicited. (3) *The shape of the cavity* appeared to play only a minor rôle in the production of the bruit d'airain. (4) *In mediastinal displacement and ballooning of the pleura* a faint bruit d'airain may be heard. The explanation of this, although not quite clear, seems to lie in the combination of three factors—viz., the shape and volume of the cavity and tension on the cavity walls. (5) *Intrapleural tension* is not a factor which determines the absence or presence of the bruit d'airain, but with a positive pressure the sign is usually a little more intense. (6) In *hydropneumothorax* the bruit d'airain is heard when the effusion is small or moderate. In our opinion this is not due to the presence of fluid per se, but to the accompanying hardening of the walls of the cavity.

We have not been able to confirm the observation of Minerbi, Mongini, and Benassi that the bruit d'airain tends to disappear in long-standing cases of pneumothorax. If the pneumothorax is maintained, the bruit d'airain persists, and sometimes in greater intensity as time goes on. Nor have we confirmed their remark that the sign disappears in the 24 hours following a refill. In practically all our cases when the sign was present before the refill it was heard afterwards, sometimes more intense and usually over a wider area. But we agree with their interesting observation that in nearly complete and complete pneumothorax two distinct and separate notes are heard—the lower pitched note corresponding to the long axis of the cavity, and that of higher pitch to the short axis. In our experience the presence of the higher note was not governed by the fact that the intrapleural tension was just above zero. In our cases it was heard whether the tension was positive or negative.

Value of the Bruit d'Airain in Diagnosis.

The first important point to be observed is that failure to elicit the bruit d'airain does not mean that a pneumothorax is not present. Secondly, when the sign is found over the thorax, it gives an indication of the presence of *an air-containing cavity with tense and rigid walls.*

When the mediastinum is displaced the bruit d'airain gives an indication of the amount of displacement. For instance, in excessive displacement the sign can be found extending across the spinal column to the side of the uncollapsed lung. In ballooning of the pleura, the shape and extent of the bulge can be accurately marked out by means of the bruit d'airain. When a hydro- or pyo-pneumothorax is present, the sign is heard down to the level of the fluid, and in this way the amount and level of the fluid can be fairly accurately estimated. In this connexion the bruit d'airain is of much more value than the percussion note, especially in those cases (usually pyopneumothoraces) where a tympanitic or skodaic note is found over the effusion itself.

We wish to acknowledge our indebtedness to Dr. G. T. Hebert, who kindly allowed us to study and include his cases in our series.

(*References at foot of next page.*)

ASSAM'S MALARIA PROBLEMS

AND THEIR SOLUTION.

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In a recent paper [1] I stressed the importance of *Anopheles minimus* as the main vector of Assam malaria and also the importance of controlling its breeding areas during the malaria season—i.e., in its monsoon or summer resorts. I said:—

"The factor which determines the migration of *Anopheles minimus* from a winter to a summer resort is, of course, rainfall. *A. minimus* migrates to lay her eggs in breeding areas at higher and safer levels, free from the dangers of flooding and flushing. The usual monsoon breeding areas of *Anopheles minimus* are slow-running grassy-edged drains, streamlets and streams, sometimes certain types of seepages, and certain types of tanks. It is interesting to note that in its winter resorts *A. minimus* rarely migrates to low-lying drains. These areas are carefully avoided, like some seepages and swamps, owing to contamination with the products of iron-oxide bacteria. Likewise, certain types of stagnant water contaminated with certain types of algæ appear to be factors in restricting the winter breeding areas mainly to the clear water at the grassy edges of slow-running rivers and perennial streams."

As a result of a further study of the subject it is apparent that two of the factors I mentioned as controlling the breeding habits of *A. minimus*—viz., flooding and flushing—should more correctly be described as water contamination and high velocity of current. It has long been known that certain species of anopheline mosquitoes breed exclusively in clear uncontaminated water. A careful further study of anopheline breeding areas on the terrain under my supervision, which has been regularly surveyed during approximately the past three and a half years, has shown that the breeding habits of *A. minimus* are entirely regulated by the availability of clear, uncontaminated, slow-running, or stagnant water, completely or partially exposed to sunlight. The small pockets at the grassy edges of slow-running streams, streamlets and drains, the edges of grassy tanks, kutcha wells, pools, and borrow-pits; also grassy swamps and seepages if the water is uncontaminated and completely or partially exposed to sunlight, are therefore all potential breeding areas.

[1] Jour. Trop. Med. and Hyg., December, 1929.

This I have recently proved repeatedly and the classification of *A. minimus* as essentially a stream-breeder would lead to many dangerous breeding areas being left uncontrolled. The prevalence of *A. minimus* in slow-running grassy streams and drains is doubtless due to the mechanical filtering and clarifying effect on the water of vegetation (grass and weeds) growing on the banks and sometimes in the bed of drains and streams, in addition to its action in retarding the rate of flow.

Uneven Rainfall.

The solution of Assam's malaria problem is, however, mainly dependent on solving the effects of an uneven distribution of rainfall on the habits of *A. minimus*, the main natural carrier of malaria in Assam. In countries where the rainfall is more or less evenly distributed throughout the year it is obvious that the breeding areas of anopheline mosquitoes will be more or less permanent in perennial streams, swamps, and seepages. In his article on mosquito control in the Federated Malay States, published in Byam and Archibald's "Practice of Medicine in the Tropics," Sir Malcolm Watson writes that "anopheles breeding places are generally well defined, permanent, and easily recorded on a map. They can be abolished at once by appropriate measures." The problem in Assam differs from that in the Federated Malay States, because in Assam anopheline mosquitoes generally migrate from dry-weather to wet-weather breeding places.

The effect of an unevenly distributed rainfall in a country like Assam has to be studied over the same terrain throughout the year, and preferably over a period of years, thoroughly to appreciate the seasonal changes in the characteristics and distribution of surface waters.

At the break of the south-west monsoon there is usually a complete change in the characteristics of the majority of the dry-weather breeding areas. This change varies with the composition of soil and the presence or absence of bacterial or vegetable contaminations. During the cold dry season the undisturbed waters in rivers and perennial streams on low-lying flat land are usually clear. During the monsoon season these disturbed waters are either continually or periodically muddy or laden with silt. Mud and silt and bacterial and vegetable contaminations on low-lying land during the monsoon season are therefore responsible for the migration of *A. minimus* to the uncontaminated clear malariogenic waters at higher levels. Bacterial (iron-oxide bacteria) and vegetable (red and green water-surface algæ) contaminations play a most important part in Nature in restricting the available breeding areas.

The prevalence of bacterial and vegetable contaminations on low-lying land is due to the high percentage of organic matter—i.e., a suitable food supply for these organisms in soils at low levels. Bacterial and vegetable contaminations are present throughout the year on more or less stagnant waters in drains, swamps, seepages, and pools, but are more prevalent during the steamy monsoon season when the temperature and humidity are more suitable for their growth.

The incidence of malaria on varying types of terrain is closely co-related to the clearness of surface water during the malaria season. Some breeding areas are continually dangerous throughout the monsoon season; others are periodically malariogenic, being affected by periodic high velocity of current or periodic contamination; while other areas, due to continual contamination with mud or silt or with vegetable or bacterial contaminations, are constantly free from *A. minimus* and other species of *Anopheles* which breed in clear water.

The importance of water contamination has already been pointed out by Watson. In his book "The Prevention of Malaria in the Federated Malay States," he writes: "Long before I had used oil in ravines I had noticed that the presence of the 'felted alga' meant the absence of *A. maculatus*, and I had noticed its association with pollution of water." The association of felted algae with water pollution is common in Cachar. We have also streams and drains in Cachar where the water, when seen in dry intervals during the rains, is apparently clear but contains felted algæ. A visit to these streams and drains during a heavy shower solves the puzzle. It will be seen that during the downpour the water has become contaminated with silt, often milky in appearance.

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which rapidly sediments after the cessation of the shower. Periodic contamination is also seen on healthy rice land, where the water may appear clear at dry intervals but becomes rapidly muddy during a shower.

A drought in the early part of the monsoon season considerably affects the incidence of malaria on low-lying terrain, for the effect of drought is to retard the period of migration of *A. minimus*—that is, increase of malaria on low-lying land. Likewise heavy rainfall or flooding in the early part of the year drives *A. minimus* from the now contaminated waters on low-lying terrain to the clear water at higher levels (an early formation of summer resorts) resulting in early epidemics of malaria on plateaux and high-lying lands, leaving the low-lying areas surrounded by contaminated waters as health resorts. The result is that during the normal monsoon season we have a paradox: health resorts are areas surrounded by healthy contaminated water, while areas with unhealthy clear water are death traps. Hence, by making drains, tanks, kutcha wells, pools, borrow-pits or other collections of water which remain continually clear during the malaria season mankind has unwittingly created much malaria. When periodically clear and uncontaminated over intervals long enough for the aquatic stages of *A. minimus* to be completed these areas may become periodically malariogenic. On low-lying land malariogenic water during the monsoon season is usually limited to the unshaded grassy clear water tanks used as drinking water supplies. Perennial streams are usually malariogenic only for short periods during the year—i.e., for about six weeks before and about six weeks after the south-west monsoon, but again the period of malariogenicity of perennial streams is entirely dependent on the soil composition of the area they drain and the amount of rainfall before and after the south-west monsoon.

Velocity of Current and Shade.

The second factor, high velocity of current, is an important but unreliable factor in mosquito control because variations in the rate of flow of a water channel are dependent mainly on the amount of rainfall. Further, high velocity of current is liable to erode the banks and bed of a water course and cause pockets or pools. Practical experience has taught me the dangers of pockets and pools. On several occasions I have found *A. minimus* safe and secure in the still water of a grassy pocket of a rapidly flowing stream. I have also frequently found it in the temporary pools left in water courses which only function as streamlets when there is continued rain. These dangerous temporary pools are most common during the north-east monsoon period or for a few weeks after the south-west monsoon. As a practical point when surveying a stream, I advise surveyors to walk against the direction of flow, as *A. minimus* larvæ are more easily caught when undisturbed by movement.

The third factor, the effects of heavy shade, is of the utmost importance when covering clear malariogenic waters. Clear malariogenic waters are usually above flood or contamination levels. The high incidence of fever on high-lying land in Assam has been well known for many years. That it resulted when heavy jungle was cut down and the land cleared for tea-planting was the experience and belief of at least one pioneer tea-planter of my acquaintance. My experience of the diseases among the local hill tribes has also shown me that the degree of malaria among the tribes living on the lower ranges of hills is intense. The reason is obvious when the areas are visited. Annually the hill tribes *jhum* (cut down and burn) the jungle to clear areas for the cultivation of hill-rice, thereby exposing streams, streamlets, and seepages. My predecessor, Dr. H. J. Glover, stated in 1910 that the commonest type of malarial attack in Cachar was "jungle fever." As synonyms for "jungle fever" Glover gave "bilious remittent fever" and "clearance fever." Had the "fever" been more appropriately named "jungle clearance fever," the *fons et origo* of the ill-health on many plateau and high-lying tea estates would have been recognised before the pathological importance of hookworms, a common factor on healthy and unhealthy tea estates, became unduly stressed and obscured the true cause.

The reasons why some anopheline species avoid shade whilst other prefer it have yet to be definitely ascertained. *A. minimus*, in common with most other anopheline species, undoubtedly prefers breeding areas where vegetation containing chlorophyll (grass, &c.) can grow, but extensive field experiences have given me the proverbial exceptions which prove the rule. On several occasions I have found *A. minimus* breeding in clear stony pools devoid of vegetation. Recently I also found larvæ sheltering in a small pocket of a stream covered with dense shade, and I have several times found the larvæ of the shade-loving *A. aitkenii* in clear grassy streams exposed to bright sunlight. The explanation in the latter cases is obvious when the areas are studied, as the larvæ have undoubtedly been accidentally flushed from their natural habitats to unnatural breeding places by a heavy downpour of rain. In the case of *A. minimus* the natural, grassy, exposed, known breeding place was only ten yards away from the heavily shaded sheltered pocket.

Laboratory Findings.

The results of my experiments in the artificial conditions of a laboratory have usually been contrary to my field experiences.

In the laboratory I have bred out *A. minimus* in water which was collected from a pool under heavy bamboo shade where the water was apparently contaminated with decomposing bamboo leaves. I have bred it out in darkened almirahs, in the water from "felted alga" streams, and in red iron oxide water, although the larvæ had an initial struggle to break the oil-like film. The thick scum of surface algæ, however, asphyxiates all anophelines—even *A. vagus*, a contaminated water breeder—within a few hours.

Mud and silt from muddy and silty waters rapidly sediment in hatching-bottles in the laboratory and *A. minimus* larvæ readily breed out in the clear supernatant water. Probably in nature, however, silt in suspension asphyxiates anopheline larvæ such as *A. minimus* from blockage of the respiratory organs. In its natural environment a certain degree of sunlight is apparently essential to provide the normal food-supply on which *A. minimus* larvæ feed, but until definite scientific reasons are forthcoming one can only conjecture that the habits of certain species of anopheles vary like those of the various races of mankind, who cease to procreate their species in unsuitable or unnatural surroundings.

Malaria Control.

In discussing the principles of mosquito control (loc. cit.) I stated that the practical application of Nature's methods of flooding or flushing can be artificially obtained in appropriate areas by mechanical means, such as sluice-gates, bunding, straightening streams, and silting loops. I would here like to emphasise the fact that, as a result of a further study of soil compositions, the appropriate areas where Nature's methods can be artificially applied by these means are very limited indeed. Flooding should never be carried out unless the resultant effect is effective water contamination; periodic flushing is liable to make pockets at the edges or leave pools in the stream bed. Bunding may result in a collection of dangerous clear water, and straightening streams, unless in very carefully selected areas, may not only be associated with the dangers which arise from flushing but, owing to increased velocity of the current, may increase the size of subsequent lower loops in the stream course.

For experimental purposes I have selected duranta to shade known dangerous narrow drains and streamlets, while *Cassia nodosa* or *javonica* has been selected for known dangerous broad main drains and streams. Duranta is the thorny privet hedge commonly seen around bungalow compounds. Animals will not eat it and, owing to the dense shade produced when thickly planted, it should simulate the degree of shade which is inimical to the habits of *A. minimus* and prove a cheap and permanent anti-malarial measure.

On broad streams under natural conditions I have found that heavy bamboo shade eliminates *A. minimus*. Unfortunately bamboos, which are used as building materials in house construction and for many other purposes, are liable to have an uncertain existence when they reach maturity in districts where bamboos are annually becoming more scarce. The two species of cassia, especially the indigenous *nodosa*, appear to be the most suitable type of shade for broad channels. These two species of cassia are rapidly growing leguminous trees, giving dense shade; they are deep-rooted, withstand storms excellently, and, like duranta, their foliage is not eaten by animals.

The more I study the malaria problems of Assam the more does the truth of Watson's statements in the Federated Malay States become apparent: "Work which leaves a trail of malaria behind is bad engineering. As we learn more, perhaps the time will come when we shall be able to say to one species of anopheles 'come' and to another 'go' and shall be able to abolish malaria with great ease, perhaps at hardly any expense." Man-made clear water-tanks, kutcha wells, pools and borrow pits, man-made clear water drains, exposed streams and streamlets, and improperly constructed bunds or embankments creating dangerous clear-water breeding areas, swamps and seepages where safe natural thick swamp vegetation has been cleared, are all found on the terrain on which I had been investigating malaria problems.

I have found that low-lying, well-shaded tanks are free from *A. minimus* during the rainy season. On careful examination it will be seen that these tanks are very easily contaminated with mud (rainfall and soil erosion) owing to the absence of a grassy-edged binding, because heavy shade prevents growth of vegetation. I have had no experience of well-shaded tanks at high levels, as all the tanks at high levels on the terrain under my supervision are exposed; I am carrying out experiments in this direction. I have attempted to contaminate clear water-tanks at high levels with surface algæ but, apparently owing to absence or insufficiency of an appropriate food-supply (organic matter) in high-lying clear water, surface algæ rapidly succumb. My researches have also taught me that work which can be carried out with impunity on certain types of soil and strata cannot be carried out on others, and that it is unfortunately easier to create malaria than to eradicate it.

The treatment of Assam's malaria problems is based on a complete knowledge in each area of the factors which are responsible for malaria, hence a thorough survey during the malaria season is absolutely essential. In the absence of definite knowledge of the effect of heavy shade around dangerous clear-water tanks, it is obvious that properly constructed wells or piped water-supplies would eliminate this source of man-made malaria. Dangerous clear-water pools, borrow pits, and functionless drains should be filled in. Exposed dangerous clear-water drains, streamlets, and streams should be covered with heavy shade. Swamps and seepages may be assisted to revert to their safe natural condition by replanting thick swamp vegetation such as tarapat. In many cases, however, and especially in the case of seepages, I have found it more practical—i.e., the areas can be brought more rapidly under control—to adopt Watson's drainage methods than to cover the resultant clear-water drains with heavy shade.

It should be clearly understood that there are in Assam many miles of harmless exposed waters in rivers, perennial streams, and drains; it would be a gross waste of human energy and money to cover these with dense shade or to fill in contaminated pools and borrow pits.

Until biological control can be restored, the cheapest and most effective method of controlling malaria is by larvicides, especially by oiling, but it has to be remembered that the control of malaria by oiling can only be compared to the control of the hyperglycæmia of diabetes with insulin; as soon as treatment is discontinued the disease returns. Further, cessation of control may be attended with disastrous results, owing to an increase in the non-immune population during the controlled period.

Clinical and Laboratory Notes.

A NOTE ON PAIN IN RELATION TO DUODENAL ULCER.

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THE most important factors in the investigation of the cause of that particular pain which is associated with duodenal ulcer are the anatomical disposition of the first and second parts of the duodenum and the behaviour of the contained gas derived from the stomach after a meal, particularly its pressure effect in the first part. There are many types and varieties of stomachs and duodena, no two being exactly similar. In every case, however, the direction and anatomical lie of the first two parts of the duodenum, in relation to each other, are the same. The first part runs upwards and backwards, and is suspended at its termination by the free edge of the gastro-hepatic omentum, being freely movable. From here the second part commences and runs directly downwards, being more or less fixed.

The most extraordinary features of an active duodenal ulcer (by "active" I mean "unhealed") are that, no matter how full the stomach may be after a meal, the patient is entirely free from pain, and it is only when the stomach is nearly or quite empty that he complains of pain. In other words, a large amount of food will pass over the ulcer for hours on end without causing any pain whatever. Another common but nevertheless strange fact is that taking liquid or solid food when pain is present will soon relieve it. Several theories have been advanced to explain the cause of this particular pain, but they are not altogether convincing. Consideration of the possibility of distension of the ulcer-bearing portion of the duodenum by gas coming from the stomach may, however, help to elucidate it. There is always a certain amount of gas in an empty stomach. After a meal this is greatly increased, a fact easily confirmed by percussion. Most of the increase is said to be due to swallowing atmospheric air, but it is not unlikely that there is some actual diffusion into the stomach itself.

In the last 20 cases of duodenal ulcer which came under my care I introduced an Einhorn's tube into the first part of the duodenum, verified its position under the upright X ray screen, and inflated that part of the gut. In each case I was able to satisfy myself that at a certain point of distension the same kind of pain could be reproduced as that complained of by each individual patient. The volume of air introduced in each case varied. These patients ultimately underwent operation.

Pain due to After-coming Gas.

It seems to me, therefore, quite reasonable to suppose that distension by after-coming gas from the stomach is at least one possible cause of pain in active duodenal ulcer. This gas follows the meal out of the stomach, making its way towards the antrum and pylorus, and eventually filling the first part of the duodenum. Distension follows, and pressure in an already over-sensitive ulcer-bearing area of peritoneum results in pain. This pain is not colicky or griping, but rather an increasing ache, gradually reaching a point of maximal intensity, and as gradually falling and diminishing. This is what one may well expect from slow distension. Owing to the localised inflammation accompanying the ulcer, there is a certain degree of paralysis of that portion of the gut. This in itself is sufficient to delay the expulsion of the contained gas, but much more important is the arrangement of the second part of the duodenum. This part, in the erect posture adopted by man, lends itself very effectively to obstructing and resisting the exit of gas from the first part because of its vertical position and

its immobility. The effect is distension followed by pain. The third part of the duodenum offers no such resistance, owing to the slightly upward course which it takes. Food, on the other hand, passes rapidly through the whole duodenum, if it may be assumed that an ordinary meal behaves in the same way as a bismuth feed in cases of duodenal ulcer. The direction of the second part is rather an aid to its progress. As the gas in the stomach becomes less, so does that in the first part of the duodenum. It is slowly evacuated, the distension lessens, and ultimately—although some still may remain—there is not enough to reach that point of distension which will create pain in that particular duodenum of that patient. The duration of the pain depends upon the time which it takes for the volume of gas in the first part to fall below this point.

The ages of my patients ranged from 18 to 53. All except four were males. Six ulcers were situated at the junction of the first and second parts, in the angle between the two. Four were on the posterior surface; two of them were so small that they were only seen on opening the gut. Ten were placed along the anterior surface between the pylorus and the termination of the first part. A partial duodenectomy was performed in three cases, and a gastro-jejunostomy in 17.

The time of onset of the pain bears no relation to the size or position of the ulcer, or to its distance from the pylorus. It simply depends upon the period which elapses between the ingestion of a meal and the beginning of the painful response by the over-sensitive ulcerated area to distension by the after-coming gas.

Treatment Directed towards Lessening Tension.

The more common methods of treatment of duodenal ulcer are:—

(1) *Diet.*—A restricted diet is usually given. This necessarily lessens the intake of air into the stomach. Sippy's method, in my opinion, owes its benefits to the continuous displacement of air at the pyloric end of the stomach. In much the same way the disappearance of pain on taking more food may be explained; it prevents the further addition of gas to the duodenum.

(2) *Drugs.*—Alkalis are freely administered. Their effect, however, is probably due to relaxation of stomach tone, and so to retarding of the passage of gas into the duodenum, rather than to their action in neutralising or diminishing the acidity of the contents of a "duodenal stomach." The accompanying hyperacidity is in all probability not the cause of pain, as this disappears on fasting; the acid content is highest, for instance, in the early morning, and pain does not appear until some time after the first meal. Belladonna is another drug commonly used. One of its principal actions is to relax tonicity, and the effect is much like that of alkalis in delaying the progress of gas into the duodenum. Effervescing drinks merely cause "belching," and so eliminate the gas which is already present in the stomach.

(3) *Posture.*—Rest in bed improves the condition of the patient, and the pain becomes markedly less or disappears altogether. This, I consider, is accounted for by the fact that the second part of the duodenum is changed from a vertical to a horizontal position, thus lessening the resistance to the outlet of gas from the first part.

(4) *Surgical.*—Gastro-jejunostomy is regarded as the most satisfactory form of treatment. I think the effect here is not the neutralisation of the acid by the bile, but the additional opportunity afforded for the escape of gas or some of it through the stoma.

All forms of successful treatment depend upon lessening tension in the first part of the duodenum and so giving rest to the ulcer, and an opportunity to heal. This can be brought about by reducing the intake of air, retarding and preventing the passage of gas into the duodenum, posture, and diverting the gas in the stomach.

Most of the literature on this subject abounds with mass of technical detail and physiological assumption, and although the cases I have quoted in support of my contention may be too few, I feel sure, having observed and dealt with a large number in the past, that the explanations advanced by the various workers in this field do not fit the facts.

I am indebted to Dr. J. B. Higgins, radiologist to the Infirmary, for allowing me the use of his department.

A NOTE ON
HÆMOSTASIS IN THE MASTOID OPERATION.

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IN the course of the mastoid operation there are three separate stages in which the operator is confronted with hæmorrhage which has to be controlled before he can proceed. These stages are: (1) the incisional stage; (2) the osteal stage; (3) the plastic stage (in the radical or modified radical operation only). This division is both anatomical and practical, the bleeding being of a type peculiar to each stage.

Incisional stage.—The scalp has an exceedingly free blood-supply, so that incisions bleed very freely; the hæmorrhage is difficult to control and apt to prove more persistent than it is from incisions in any other part of the body. The bleeding arises from an anastomotic network of arteries, taking source from the posterior auricular, the occipital, and the superficial temporal arteries. The usual method of hæmostasis by artery forceps is time-consuming, and owing to the texture of the scalp no easy task. Moreover, ligatures tend to slip easily. An alternative procedure is to incise boldly down to bone and rapidly elevate the flap, ignoring the immediate bleeding, and controlling it by pressure of the retractor.

Osteal stage.—The chief blood-supply to the mastoid air cells arises from the stylomastoid branch of the posterior auricular, entering through the stylomastoid foramen, on the deep aspect of the mastoid process.

In the *plastic stage* the bleeding is from the vascular integument over the auricle, supplied by the posterior auricular artery.

The procedure to be described renders the incisional and plastic stage a bloodless one and will minimise to a surprising extent the bleeding in the osteal stage. It is applicable to adults and children. The method is not applicable to those cases in which a large periosteal abscess is present over the mastoid.

The mastoid area is prepared as usual, shaved and painted with iodine. The hair is kept off the field of operation by a broad strip of sticking plaster along the limits of the shaved area. This plaster is subsequently removed at the termination of the operation, while the patient is still anæsthetised. Ten minutes before the anæsthetic is begun the whole of the retro-auricular (mastoid) area is infiltrated with about 20 c.cm. of novocain solution (1 per cent.) to which about 8 drops of adrenalin solution (1 in 1000) have been added. The infiltration is from the mid-point of the incision, subcutaneous and also towards the periosteum. The needle is also carried along the posterior superior meatal wall and this region infiltrated. Another point to assist in a bloodless operation is to have the patient propped up at an angle of 30°. The sole function of this injection is to secure a bloodless operative field—it is in no sense a local anæsthetic.

The injection of the solution causes an ischæmia of the tissues and this persists for over 90 minutes. The effect produced is similar to that seen in the part of a limb distal to a tourniquet.

Stage 1.—The incision down to bone is through exsanguinated tissues. The exposure of the bone might well be as on the cadaver. There is no bleeding or oozing and no occasion to use an artery forceps; the whole exposure of the osteal operative field is performed in as many seconds as it usually takes minutes in the presence of hæmorrhage. Even

the use of a swab becomes unnecessary in many cases up to this stage.

Stage 2.—As regards the osteal parts, the effect of the injection varies. In all cases the bleeding from the mastoid is minimised, and in some cases the oozing is so slight that the operative field is never obscured. Gentle dry swabbing at intervals will keep the field clear. The injection is carried along the posterior superior meatal wall, and thus the branch of the posterior auricular, which goes via the stylo-mastoid foramen to the air cells, comes under the influence of the injected solution. The vessel is "occluded" by the adrenalin and novocain and thus the blood-supply to the bone is diminished.

Stage 3.—At the end of the operation, when any plastic procedure becomes necessary—e.g., in the radical mastoid—the tissues are still blanched. The separation of the skin from cartilage is bloodless, and the removal of the cartilage therefore becomes extremely simple.

A CASE OF EMPHYSEMA TREATED BY MECHANO-THERAPY.

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PHYSICIAN IN CHARGE OF THE MECHANOTHERAPEUTIC DEPARTMENT AT THE ELIZABETH GARRETT ANDERSON HOSPITAL, LONDON.

THE treatment of emphysema is still so unsatisfactory that I am encouraged to report the following.

In a series of cases I lately had a patient, aged 73, with undoubted emphysema and history of right-sided basal phthisis as a boy. From the latter recovery was complete, and his health was excellent until six years ago when periodic attacks of bronchitis had begun. In spite of wintering in warm climates he still had bronchitic attacks and gradually became so short of breath that he found walking on the level difficult and upstairs impossible. A recent attack of severe bronchitis had left him sitting bolt upright in bed unable to lean backwards or sideways because of the coughing these movements induced, hence getting very little sleep. He had much pain in the right side on coughing, and had been examined several times in the previous weeks, but no active tuberculosis had been detected; neither could I find any. All the usual medicinal treatment had been ineffective.

When called to him I found all the signs of emphysema. The patient was sitting up in bed, very breathless, with a severe spasmodic cough, a barrel-shaped chest with the usual kyphosis. The chest-wall was immobile, percussion note hyper-resonant, and breath sounds barely audible.

I treated this patient entirely on mechanotherapeutic lines, using chiefly passive and active exercises designed to strengthen expiration and in general to diminish the volume of the chest. These were:—

1. Strong manual vibrations over the front of the chest, and stimulatory nerve frictions on the upper four posterior dorsal nerves which communicate with the posterior pulmonary plexus through the anterior spinal nerves and rami communicantes.
2. During attempted prolonged expiration, intermittent pressures (about 5–9 per expiration) manually, over the upper lobe anteriorly, first gently, then more strongly.
3. Strong manual vibrations over the apices, and gentler vibrations on the trachea to loosen the sputum.
4. Short, sharp flicking clapping with the finger-tips to the chest and firmer hacking with the ulnar edge of the hands between the scapulæ.
5. General abdominal manipulation just below the diaphragm, especially the gastric area.
6. Petrissage and circumduction of the legs to remove œdema.

As soon as the patient's condition permitted the following exercises were added:—

7. The patient semi-reclining, stretching above his head his hands, grasped by the operator, approximated his elbows in front of his face, and during forcible expiration drew them downwards on to his chest, against resistance.
8. The patient sitting upright with straight arms abducted to a right angle, carried his arms forwards during forcible expiration against the resistance of the operator's hands placed on the patient's wrists.

The last two exercises were repeated three times, the pressure of the contracting pectoral muscles assisting expiration. The patient was also told to practise expiration by himself several times daily, a few breaths consecutively.

Treatment on these lines daily for a fortnight resulted in increased elasticity of the thorax, diminution of the barrel-shape and kyphosis, the breath sounds became more audible. The pain in the side had gone and the patient had not coughed for two days. Sleep was good and walking quite easy. Six months later the improvement had been fully maintained.

In the course of 30 years I have treated about 200 cases of emphysema and have failed in but two cases to improve the condition. Even if some of the manipulations may not be known to the practitioner, I believe relief would soon follow merely from *intermittent* pressures on the front and sides of the thorax, provided they are done evenly, gently, and elastically during expiration—followed by exercises 7 and 8.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

AT a meeting of this Subsection on Dec. 11th, Mr. CECIL ROWNTREE, the President, opened a discussion on

COMPLICATIONS OF OPERATIONS FOR PILES.

It might be said, he remarked, that there should be no complications of an operation for piles on an otherwise healthy patient. But patients were not always healthy, and no surgeon was competent all the time. These operations were attended by so little risk to life that they were often undertaken lightly, without a competent anæsthetist or assistant, and by those who were scarcely qualified to carry them to a successful issue. The easier an operation, the greater was the discredit if anything went wrong, and it was essential to be fully alive to the possibilities of trouble, even in a straightforward case. In dealing with patients who were aged, infirm, diabetic, or paralysed, or who had damaged hearts, there was all the greater reason for care in the minutiæ. In a recent book he noted that 18 possible complications and 6 sequelæ were described in connexion with operation for piles. The Section ought to try to settle some of the outstanding questions on which the text-books at present differed. The choice of anæsthetic had been discussed elsewhere a week ago,[1] but it might be noted that the surgeon's position in these operations prevented his keeping a watchful eye on the thoracic end of the patient. Sudden and complete relaxation of the anal sphincter should suggest the need of added watchfulness.

At operation it might be discovered that the diagnosis was wrong or insufficient. The diagnosis should have been established with the proctoscope, but this need was not always realised in practice. There must always be a good light for the operation. If the case was really one of piles and the operation was satisfactorily completed, the surgeon was often confronted by the problem of post-operative pain. Some patients had little or no pain; others had severe pain which he could not account for. A clumsy operation caused more pain than one in which the tissues were gently handled, yet some of his patients had had pain despite his best precautions. Mr. Lockhart-Mummery laid stress on the importance of maintaining asepsis, but the President had not found that pain was abolished in this way. As the pain came on within 24 hours or less, he did not think it could be due to sepsis. Neither did post-operative pain appear to depend entirely on what operation was

[1] See THE LANCET, Dec. 14th, p. 1258.

done. Some said that the cautery operation was less painful than the ligature operation. For a long time he had been employing the latter, and his strong impression was that the pain was less with this, also that the pain was less severe in women than in men, and less in the aged and feeble of both sexes than in the young and vigorous; hence it might have some relation to muscular vigour and to spasm of the levatores ani. If the pain was due to reflex spasm, what induced it? Probably it was a matter of attention to minor details of technique. In applying the clamp it was necessary to make sure that no sensitive nerve-endings were included in it. The question arose whether the sphincter ani should be stretched. The President thought that stretching was a help, but unless it was done very gently, the tissues might be so damaged as to do away with any advantage it would afford. Where pain was present after operation only one drug was available—namely, morphia—and he used it, though he knew that some people were suspicious of it. The doses given were often inadequate; to dole out gr. 1/6th of morphia to a strong 12-stone man was to ask for trouble.

The most dramatic, and perhaps the most important, complication was hæmorrhage. Both recurrent (or primary) and secondary hæmorrhage followed, with varying frequency, every method of operating for piles. Could anything further be done to reduce the already small proportion of cases in which bleeding followed? He could only urge the need for attention to all the small details, such as avoiding bad anæsthesia, discarding ligature material which had been boiled once too often, and operating with deliberation. The strain on the ligatures was very great. The amount of blood coming away at one of these hæmorrhages would astonish the uninitiated, and inspection of the rectum through a speculum during such hæmorrhage needed caution for the observer's own sake. The bleeding-point had to be found and tied, and it was essential to have a good anæsthetic and a number of sponge forceps to grasp the soft and yielding blood-stained tissues without damaging them. Secondary hæmorrhage was more troublesome and more difficult to deal with, and it seemed clear that it was due to sepsis; it was strange that it did not occur more often. In this form of hæmorrhage the difficulty of finding and securing the bleeding-point in what might be a sloughing area was so great that the best results were obtained by plugging or packing the rectum. Sometimes a stricture formed after a hæmorrhage; both might be the result of sepsis in the operation area.

Another complication was retention of urine. Most of the books said that this ought not to occur after a properly performed operation for piles; yet the same books—assuming its occurrence—gave several alternative methods of dealing with it. This complication might follow every type of operation, and it would be well to know how it could be avoided. He thought it was partly the fault of the surgeon, and that trauma was a factor. It was relatively commoner in vigorous young adults, and he had not yet heard a convincing explanation for it. The passing of a catheter should not be left too long, for if the bladder was overdistended, catheterisation might have to be repeated. Post-operative retention was less common in women than in men. An important pitfall was unrecognised prostatic enlargement; the patient might not have had sufficient cause to seek advice for his prostate, but the rectal interference might be the last straw, and set up a train of prostatic symptoms. Other complications might be more or less coincidental. Thus, he had been asked to see a middle-aged muscular man who had been vomiting for three days after an operation for piles. His abdomen was distended and he had intestinal obstruction; a volvulus, already gangrenous, was discovered, and he died the same day. The speaker thought that the volvulus had been caused by post-operative vomiting. Sometimes fissure in ano developed during convalescence, but, as a rule, he considered the fissure was present before the operation was undertaken; it was overlooked through being tucked away between two piles. This, again, emphasised the need for good light and efficient exposure. The rarity of abscess and fistula after pile operations was a testimony to the care usually exercised in them.

In conclusion, the President pointed out that the patient who exchanged his piles for a stricture was reminded every day of his life what a bad bargain he had made. It was tempting to call strictures in one's own work "traction bands," and he wondered how far these bands were preventable. Occasionally they occurred after operations carried out under the best conditions. Were they due to fibrosis and contraction of the submucous layers, and was there agreement about the relative frequency of stricture in various types of operation? Was it less common in the operation in which the whole pile was ligatured en masse, without transfixion, or cutting except for the V-shaped incision in the skin, or after an attempt had been made to strip up the pile from the rectal wall until a definite pedicle was made, transfixing with a ligature? In the second there was certainly a raw surface left to granulate up, and so one which was exposed to sepsis. No detail should be considered too insignificant to demand attention.

Discussion.

Mr. HASLET BALDWIN said he had seen but few cases of hæmorrhage after operation for piles. He agreed that maintenance of asepsis would prevent many complications. He always swabbed the rectum with an antiseptic before beginning the operation. After operating he gently dilated and examined the mucous membrane to see whether a stricture had formed. He never dilated the sphincter.

Mr. W. B. GABRIEL held that post-operative ulceration was an important complication, because it led to chronic disability and needed prolonged after-treatment; and even so it might never return to normal. Operation should never be done on a septic pile; if ulceration was present it should be treated on expectant lines, with antiseptic compresses, and the patient in bed. A 5 per cent. solution of carbolic acid in oil gave good results in bad piles. For internal piles the Whitehead operation should not be done. He had seen severe complications after the clamp and cautery operation. The ligature operation was the method of choice. During the last year he had used local anæsthesia, which gave full relaxation of the sphincter. Post-anæsthetic vomiting was to be avoided in order to prevent external œdema. Piles should not be stripped up high. Ligation at the level of the anus reduced secondary hæmorrhage. Catgut was superior to silk because it gave smoother and more rapid healing.

Mr. CYRIL NORBURY said that at one time he did the high stripping operation and had a number of strictures. He now ligatured a little above the anal margin, and his results were better. He had had two cases of that serious complication, suppurative pylephlebitis, one of which had proved fatal on the eighth day. Absolute asepsis in the anal region could not be secured and the possibility of suppuration in the liver should be in the surgeon's mind. Another uncomfortable complication was irritation after the operation. Some patients had marked pruritus ani after it, but fortunately this responded as a rule to local measures.

Mr. E. T. C. MILLIGAN spoke of strictures of the anal canal after pile operations, a complication which he contended could be avoided. The site of the stricture ring was the upper third of the anal canal. In a series of 282 operations stricture occurred in 32 (11·3 per cent.); while in another series of 290 there were 27 strictures (9·2 per cent.). When three or four large piles were removed by stripping up, a large bare ulcerating surface was left, and this, encircling the canal, might result in stricture. Ligature at different levels to obviate this complete encircling had been suggested but could not always be satisfactorily carried out. He did not strip the pile off the anal canal, and he left a good area of healthy intact skin

and mucous membrane between the ligatured hæmorrhoids. If a constriction ring did not develop immediately after operation it would not develop at all.

Mr. V. WARREN LOW thought that most of the complications met with in hæmorrhoid operations were due to leaving raw areas. He carried out the operation devised by Mitchell, of Belfast, and never removed more than four separate hæmorrhoids. He had not had stricture in his cases and he had not seen hæmorrhage follow. In retention of urine in these cases he thought there was a large functional element; it was expected, and doctors for that reason generally complained of it in themselves after this operation.

Mr. W. S. PERRIN said his practice was to divide the pecten band, and pain was practically non-existent in the first 24 hours. He objected to dilatation of the sphincter, and he had not had hæmorrhage after the ligature method. He preferred the old-fashioned ligature operation.

Cases were shown and discussed.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

A Fatal Case of Diverticulitis.

A MEETING of this Section was held on Nov. 29th, Mr. R. ATKINSON STONEY, the President, in the chair.

Sir WILLIAM WHEELER described the clinical course of a fatal case of diverticulitis which perforated into the free peritoneal cavity. The patient, a man aged 44, had previously been healthy. Half an hour after a dose of salts, when his bowels had acted, he developed an excruciating pain in the left iliac fossa. He was seen within an hour, and the signs and symptoms were then exactly similar to a recent perforation of the duodenum or stomach, except that all were in the left iliac fossa. There was no difficulty in diagnosis, notwithstanding the absence of history. No left-sided appendicitis could have developed with such dramatic suddenness. The bowels had acted well. There was no distension, and the picture was one of inflammation and not of obstruction. Within three hours the abdomen was opened to the left of the middle line below the umbilicus. The pelvic colon was found loose (exceptional in diverticulitis) and the perforation was dealt with by leaving the loop of colon outside the abdomen. Subsequent resection by the Mikulicz method was contemplated. The cæcum was drained. The following day ominous black vomiting became almost continuous. Lavage only produced temporary relief. A high jejunostomy was performed under gas-oxygen and local anæsthesia, but here again the loop failed to drain. Enemata were introduced by a catheter through a stab in the extruded colon, but no evacuation resulted. Vomiting continued. The patient was induced to swallow a duodenal tube, and by means of this a total of three pints of orange-coloured material was aspirated in 12 hours. At first the patient's condition improved considerably following aspiration, but later there were signs of starvation from the loss of duodenal contents. A somewhat similar case published by D. P. D. Wilkie was quoted. Sir William Wheeler pointed out that in persistent high obstruction the surgeon was faced with a dilemma. On the one hand the duodenal contents were extremely toxic, on the other loss of these contents for any prolonged period produced a physiological death. He had adopted Wilkie's plan in a modified form. The fluids aspirated from the duodenum were immediately injected through the jejunostomy. Following this procedure, drainage commenced through the cæcal tube. Peptonised milk, panopepton, and other foods also were given through the jejunostomy. On the fifth day the patient announced that he felt at last he was going to recover. This improvement lasted for six hours, but a relapse followed. Regurgitation recurred, and the patient died. Twelve pints of 10 per cent. glucose solution combined with insulin were administered intravenously during the five days. Continuous saline was given by the drop method into each axilla. During the first three days the patient appeared to be in a condition of alkalosis and some tetanic spasm was noticed. Administration of calcium and increased quantities of chlorides together with glucose proved effectual. Towards the end, air-hunger, combined with diacetic acid and acetone in the urine, indicated acidosis. During the six hours in which recovery seemed likely the material drained from the cæcum contained bile. The bile was not mingled with the other contents but came away separately. Sir William Wheeler had noticed in some cases of chronic pancreatitis the bile did not mingle with the characteristic clay-coloured stools. There was evidence in the case described of insufficiency of both liver and pancreas.

Discussion.

The PRESIDENT referred to the fact that the cæcum had been brought out through the main incision; if a separate opening had been made on the opposite side, the cæcum might perhaps have drained itself and prevented the high obstruction.

Mr. A. CHANCE was inclined to think that the vomiting was not mechanical but toxic, and suggested that the whole condition might have been toxic.

Mr. H. STOKES wanted to be clear that there really was a diverticulum. He had come across many cases of perforation of the large intestine without diverticula. It was fatal to put tubes into dilated gut for drainage purposes.

Mr. F. J. HENRY said that free perforating diverticulitis was a great rarity. In the only case in his experience there was no difficulty in closing the perforation and the patient recovered fairly easily.

Reply.

In reply, Sir WILLIAM WHEELER said that the cæcum was loose and it was possible to perform cæcostomy through the primary incision. He believed that the obstruction which followed septic peritonitis was usually mechanical. Loose adhesions between loops were the cause of obstruction. The loop of bowel was removed after death, and the perforation of one of many diverticulæ demonstrated.

Mr. OLIVER CHANCE read a paper on Some Experiences in an English Radium Clinic.

PAN-PACIFIC SURGICAL CONGRESS, HONOLULU.

(FROM OUR AUSTRALIAN CORRESPONDENT.)

REPRESENTATIVES of all the principal races bordering on the Pacific attended the Pan-Pacific Surgical Congress at Honolulu from August 14th to 23rd last.

A Honolulu Hospital.

The 13 delegates from Australia and New Zealand reached Honolulu four days before the Conference, and had a chance of studying the wonderful Queen's Hospital, built by public subscription, and containing 280 beds. It is under the directorship of Dr. Nils Larsen, a Swede of great ability and organising power, and it has reached a high level of efficiency.

Ninety-eight per cent. of the income comes from patients; the city and county pay for indigent persons who have been resident for more than five years, and there are 30 endowed beds for waifs and strays. Ward patients pay 10*s.* a day. Private wards are from £2 a day. The meals are brought to each patient, even in the ward, on a tray with a linen cloth and a vase containing one flower to give a home-like touch. The name of each patient is on a card on the treaty, and these cards are of different colours according to the diet, so that the sister in charge can see at once that no mistake has been made. The lighting of the wards at night is from a diffused dull electric light in the floor, which cannot

be seen by the patient, but is sufficient to guide the sister to the different beds.

There are five resident medical officers in the hospital, and every man in the city who is a member of the medical society is entitled to send in patients under his own care. This, of course, complicates the work, and does not make for the most expert treatment of the patient; but the disadvantage has been countered to a certain extent by the director, who has instituted weekly meetings of all those entitled to send in patients. At these meetings every week any untoward event is brought up for discussion and criticism. The name of the medical man is suppressed, but, of course, is known to most of those present. The criticism is unsparing, and even if the responsible doctor has not attended the meeting he is very soon informed of it by his colleagues in the town. Another feature of this hospital is that director, residents, and nurses are regarded as one unit, having but one object in view. Thus when lunch was given to some of the selected delegates it was attended by all those members of the staff who could be spared, including nurses.

Hospital Standardisation.

An afternoon was devoted to a discussion on hospital standardisation which was illustrated by exhibits, including a model of the new King County Hospital of Seattle, which is considered the most modern hospital supported by charity. Another exhibit showed the standardisation of sponges used at operation. This subject was investigated throughout America, and it was found that the different varieties in use numbered over two hundred. These were standardised and seven varieties only are now recommended. Dressings have been dealt with in the same way.

Prof. C. JEFF MILLER (New Orleans) said that in the 12 years since hospital standardisation began in America it had spread into every branch of hospital work. Its annual survey included 3000 hospitals, of which nearly 2000 were on the approved list.—Dr. M. T. MACEACHERN explained hospital standardisation:—

It is a movement, he said, which has been carried on by the American College of Surgeons during the past 12 years with the object of providing better service to the patient. An annual survey of all hospitals of 25 beds and over is carried out. The rating of each hospital is based on what is known as the minimum requirements, of which the fundamental principles are: a properly organised medical staff; regular conferences for review and analysis of the clinical work; accurate and complete case records; and adequate laboratory and X ray facilities under competent supervision. This movement has done much to reduce the average stay of patients and mortality-rates in hospitals.

Surgery of the Alimentary Tract.

Prof. MILLER emphasised the need for early diagnosis and rapid operation in cases of intestinal obstruction. "This was a condition," he said, "in which the lowest mortality is achieved, not by the conservative surgeons, who operate only on definite diagnoses and for whom, ordinarily and properly, we have only praise, but by that other group of enthusiasts, whose resort to the knife is immediate, and for whom, ordinarily and properly, we have only condemnation. Their craftsmanship may be dubious, their surgical judgment is unquestionably dubious, but in this one contingency at least we should do well to emulate them, for they lose the fewest patients from this deadly disease." He outlined the medical and surgical treatment in detail, and stated "that the mortality rises approximately 1 per cent. with each hour of procrastination, and any mortality over 10 or 12 per cent. can be charged only to delay. The death-rate, which is popularly quoted as 30 or 40 per cent., actually is 55 or 65 per cent., and we are only stultifying ourselves when we refuse to face the true figures."

Prof. J. R. B. BRANCH (Shanghai), in a communication on the surgical treatment of intestinal tuberculosis, said that pictures after a barium meal showed two striking things—hypermotility due to ulceration, and filling defect in the cæcum and ascending colon, which might be due to hypermotility or actual stenosis. Surgery was clearly desirable in some borderline cases, in cases with stenosis, and in those which had resisted thorough medical treatment.

Dr. A. O. LOE (Seattle), speaking on acute perforation of peptic ulcers, pointed out that early diagnosis and operation were imperative. The mortality-rate was directly proportional to the time intervening between perforation and operation. Simple suture was a safe routine. Resection and suture might require secondary operation later, owing to obstructive symptoms or disturbed physiological action. Resection with Finney or Horsley pyloroplasty was the more ideal operation in early cases, relieving symptoms and producing more normal physiological relations between stomach and duodenum. The mortality-rate was low. Resection and gastro-enterostomy was indicated only in cases of large calloused ulcers and immobility of the duodenum.

Dr. HORACE J. WHITACRE (Tacoma, Washington), in a paper on duodenal surgery, said that loss of appetite, nausea and vomiting, dizziness, general malaise, and a great variety of vague abdominal symptoms were duodenal in origin. Duodenal adhesions secondary to cholecystitis, duodenal ulcer, duodenitis, and other abdominal conditions could and did cause these symptoms. "I now," he said, "look upon duodenal mobility and an unhampered duodenum as an objective, which, from the viewpoint of a complete cure, outweighs in importance the removal of the gall-bladder in a case of cholecystitis with adhesions." He described a peritoneal plastic operation which would restore free peristaltic mobility to the duodenum and which would cure the symptoms.

Goitre.

Dr. DAVID C. HALL (Seattle) reported observations on 30,000 students of the University of Washington, and said he had found the incidence of goitre to be high on mountain range slopes and low on plains and Puget Sound islands. Recent years show a marked decrease due to education, iodised salt, and iodine tablets.

Dr. CHARLES L. MIX (Chicago) said that adenomatous goitre could be wiped out by the administration of proper amounts of iodine to all pregnant women; in this respect veterinary surgeons were ahead of physicians. In pure adenoma, the administration of iodine might do harm instead of good. Dr. Mix was emphatic in his belief that any adenoma should be removed surgically as soon as discovered. Goitre of non-toxic type might become toxic at any time, through abnormal innervation brought on by fright or a number of other causes.

In goitrous regions one-third of the girls and one-fifth of the boys showed thyroid enlargement. The reason for the excess in girls was that they must store up enough thyroid secretion to last their offspring for a certain length of time. If they were unable to do this owing to an insufficient supply of iodine in food or water, the thyroid gland would enlarge by way of compensation in an effort to increase its secretion by increasing its capacity.

Dr. J. RUSSELL WELLS (New Zealand) stated that he had known a few instances of goitre in Maoris, but this was in a district where the Maoris had largely adopted the customs of the residents of British origin. He agreed with Dr. Mix that all adenomata should be removed.

Dr. R. E. MCKENCHIE (Vancouver) maintained that an ultramicroscopic organism is the probable cause of goitre, while absence of iodine makes people vulnerable to invasion by the organism.

The Lungs and Bronchi.

In a symposium on bronchoscopy and thoracic surgery, Dr. EMIL HOLMAN (Stanford University, California) read a paper on post-operative intrapulmonary abscesses. "An analytical study of 1908 cases of pulmonary abscess shows," he said, "that 29·6 per cent. followed some operation, and more than half of these followed tonsillectomy. The

available experimental evidence corroborates clinical impressions that intrapulmonary suppuration may be produced both by the intrabronchial and intravascular routes. There is no experimental evidence to support the theory that the lymphatic system is a factor in the production of intrapulmonary suppuration."

Dr. LEO ELOESSER (Stanford University) spoke on chronic bronchial stenosis. Whilst tracheal stenosis and acute bronchial stenosis (foreign bodies and massive collapse) had been closely studied, not enough attention, he thought, had been paid to the chronic condition. The causes were sometimes congenital and sometimes took the form of compression due to tumours, inflammatory processes, or foreign bodies. He uttered a warning against the use of iodides, and spoke of the danger of placing the patient on his sound side in the hope of draining secretions from the affected side.

"Stenosis is important," he concluded, "not only in theory but in practice. There is much to be done for it. There is also reason to suspect that bronchial stenosis is more frequent than has been supposed, and that it has been responsible for more pulmonary damage than has been cast to its account. I am convinced that lipiodol, the bronchoscope, and familiarity with these pictures will make bronchial stenosis a common disease."

Dr. E. D. ROBERTS (Honolulu), in a paper on iodised solutions as aids in X ray diagnosis, discussed the various methods of combining iodine with oleaginous and other subjects, and described some original experiments. He had first tried corn oil as a base for the solution, but now exclusively used "kukui" oil, a Hawaiian product. This oil had proved very satisfactory and was inexpensive.

Diseases of the Eye.

Dr. LLOYD MILLS (Los Angeles) presented a cinema film illustrating the prevention of complications in the surgery of cataract. The modern preparation for the operation, he said, had largely eliminated many of the former difficulties. Vitreous prolapse, which resulted more from the patient's sudden reaction to unexpected pain than from heavy-handed surgery or predisposing ocular disease, had been reduced by adequate mental preparation for operation, perfect anæsthesia, and full suture of the wound. The use of a full conjunctival flap and its complete suture was applicable to any form of cataract extraction, save that with corneal incision. The difference between the final results of intracapsular and extracapsular operations in the hands of equally experienced surgeons who used full closure of the wound by flap and suture should depend solely upon the reaction of the eyes to retain lens substance.

Sir JAMES BARRETT (Melbourne) read a paper on visual standards for mariners and railway officers. In men of the first class, he said, the initial vision should be 6/6 in each eye, with normal eyes and colour vision and an error of refraction not exceeding 1 dioptre, including 0·5 of astigmatism, with a little flexibility as regards the error of refraction. For less responsible positions a larger error of refraction could be permitted if there was no eye disease. The vision of all those concerned in a railway or marine accident should be re-examined before they were allowed to resume duty.

Leprosy.

Dr. FORREST J. PINKERTON (Honolulu), reviewing 700 cases illustrating the surgery of the leprous eye, said that early surgery upon the lid in orbicular paralysis was imperative and should be done before corneal changes have begun. In iritis early medical treatment was essential. Novocain infiltration was the operation of choice for all surgical procedures on the leprous eye.

A demonstration of clinical leprosy was given at Kalihi Receiving Station.

A rural community has been established on a peninsula of the island of Molokai, in which the inhabitants live without restriction and enjoy all the privileges of an ordinary community. They may even marry one similarly afflicted, but children are removed from the settlement immediately after their birth. To this settlement are sent lepers, whose progress towards convalescence is slow or have become a burden to their friends, but before being sent there every individual is legally entitled to remain for six months at the Kalihi Hospital, which acts as the receiving station for the territory. Here they may be examined by three physicians: one selected by the Board of Health, one by the patient, and the third selected by the former two; or they may elect to accept the diagnosis and recommendations of the physicians in attendance at the hospital. Provisions are made for subsequent examinations in cases of doubt. No children under 15 years of age are transferred to the Settlement except at the wish of their parents.

Dr. J. T. WAYSON said that since leprosy was first introduced into Hawaii it had spread rapidly. Fifty years ago there were two known cases to every hundred of the people. Since 1890 the annual number of admissions had continuously though slowly fallen.

Neuro-surgery.

Dr. GEORGE W. SWIFT (Seattle) gave an address on the dural venous sinuses and choked discs. He upheld the view that choked disc was mechanical in origin and caused by a damming of the venous blood, resulting directly or indirectly from pressure upon the cavernous and petrosal sinuses.

Dr. STEELE STEWART (Los Angeles) presented a paper illustrated by cinematograph on a possible explanation for the effects observed following ramisection in cortical rigidity. He suggested that they were due to a segmental vasodilatation of the vessels of the cord, resulting in a lessened irritability of the anterior horn cells.

Dr. E. B. TOWNE (San Francisco) and Dr. MAKOTO SAITO (Japan) read papers on radiographic localisation of cerebral tumours, and the latter showed a film demonstrating the technique of a fascial transplant from the thigh to replace adherent dura, excised in a patient suffering from traumatic epilepsy. For demonstration of the arteries of the brain he had, he said, discarded the sodium bromide recommended by Moniz and used an emulsion of lipiodol. The emulsion was injected through the superior thyroid artery after a temporary clamp had been put on the common carotid and external carotid arteries. The size of the droplets of the emulsion used was larger than a red blood corpuscle, but smaller than a white blood corpuscle. This method had been used in 40 instances without any untoward result.

Prof. W. A. OSBORNE (Melbourne) delivered an address on the surgical applications of recent advances in physiology. Dealing first with anæsthesia, he said that doses of atropine should be on the low side, since the absence of secretion removed a natural protection. Speaking of the so-called nerve patterns he maintained that "tendon transplantation is physiologically a far sounder procedure than any form of nerve implantation or nerve graft." Later in his paper he said: "The alimentary canal has duplicate chemical plant, but has only one tube for transport. Disorders of digestion are disorders of motility. Let the surgeon therefore satisfy himself about the motility, and let the chemistry look after itself."

Cancer.

Opening a symposium on cancer, Dr. EDWIN I. BARTLETT (San Francisco) pointed out that in cancer of the breast the earlier and smaller and more hopeful the lesion the more thoroughly should the operation be performed.

Mr. FREDERICK L. HOFFMANN thought that in general cancer statistics were of little practical value. Most cancer discussions concerned cancer deaths and their relative incidence to a given population, often only roughly estimated. The calculation of specific death-rates by sex and for different age-periods involved a knowledge of data often out of reach. Hence the extreme urgency that it should be understood that most statistical conclusions were only a rough approximation to the truth. The questionaire method of research, while very useful, had endless allacies.—At another meeting Mr. Hoffmann gave a detailed analysis of the cancer mortality records of

Hawaii for the five years ending June, 1928. The general cancer death-rate is low as compared with the United States registration area. The most outstanding feature of the analysis is the extreme rarity of cancer of the breast in Japanese women.

Out of 125 Japanese females dying from cancer during the five years under review, not a single death was attributed to cancer of the breast. For Chinese women, however, the proportion dying from cancer of the breast was 16·7 per cent. This compares with 6·1 per cent. for all races, 6·9 per cent. for Hawaiians, 8·0 per cent. for Caucasians. Unfortunately, for many of the races, the numbers are too small for a generalisation.

Amœbiasis.

Dr. Y. S. LEE (Korea) reviewed 200 cases of amœbic liver abscess treated at the Severance Hospital since 1912. The first 100 were treated by open operation; of the second 100, 27 were treated by operation and 73 by aspiration. Ludlow, in 1926, had reported 160 of these cases.

In discussing the predisposing causes he stated that climate would appear to have a definite rôle in producing liver abscesses in those who were not accustomed to tropical conditions. The incidence in the native army in India was 0·6 per cent., whilst in the European army it was 7·4 per cent. Whilst in India white people would appear to be predisposed to the condition, in Korea the figures showed just the opposite. Race in itself seemed to be an unimportant factor. The disease was much more frequent in males, but 19 females were affected in the 200 cases; of this there was no explanation. The use of alcohol appeared to be an important predisposing cause to liver abscess.

Indigestion was a constant symptom and was sooner or later followed by pain in the right lower chest or hypochondrium, attended in most cases with fever, sweating, and chills. A sign of the utmost importance was deep-seated pain in the region of the abscess elicited by a sudden thrust with the end of the finger. This was important not only for diagnosis, but is a guide for the insertion of the aspirating needle. Enlargement of the liver and bulging of the intercostal spaces occurred during the chronic stage, and when the abscess formed near the surface it may rupture into the abdominal cavity, pleural cavity, lung, abdominal wall, and, more rarely, into one of the adjacent hollow viscera.

In treatment, the early and energetic treatment of amœbic dysentery with emetine and the prohibition of alcoholic drinks was almost specific. In the early or presuppurative stage emetine alone was usually sufficient for a cure; when pus had formed aspiration of the abscess with subcutaneous injections of emetine was the method of choice. Aspiration should, as a rule, be repeated in from five to ten days. Open operation had been abandoned except for cases of mixed infection or sinus formation.

Surgical aspects of the treatment of bubonic plague were dealt with by Dr. WU LIEN TEH (China), and Dr. TEISHIN SEO (Japan) read a report on the results of splenectomy for the splenomegaly due to chronic schistosoma infection, which is endemic in various districts of Japan. He also demonstrated specimens of mycotic splenomegaly.

Medical Education in China.

Dr. F. C. YEN (Shanghai) said that great strides had been made in medicine, public health, and sanitation since the formation of the Nationalist Government in China. Work was unified under the Ministry of Health, and rules are being drafted for licensing medical practitioners. A national midwifery board had set up a standard for the practice of midwifery, and has just opened its first training school. A big modern hospital had been established in Shanghai for treatment, research, and the training of students and nurses; it was to be dedicated to the memory of a medical man, "who unified China and conferred great blessings on her 400,000,000 people—Dr. Sun Yat Sen." In China there were 24 medical colleges; 11 were Chinese, 7 were controlled by missionaries, 2 were under direct foreign control, and the remainder were managed jointly by Chinese and foreigners. The total number of students was 2050, whilst the number of practising physicians is estimated to be 4500. China thus had but one medical school for each 16,000,000 of population, and but one doctor for every 90,000 of population. After praising schools established by missions and by groups of Chinese and foreign citizens, Dr. Yen spoke of the type of medical school in China, which was controlled, conducted, and financed entirely by foreign Governments, as represented by the Medical Department of Hong-Kong University and the Japanese Medical College in South Manchuria.

"While they have all helped in turning out doctors, yet it raises a very serious question as to whether their contributions are for the ultimate good of the Chinese medical profession. What China needs is a united profession, not one divided up into cliques, engaged in the less profitable work of proselytising British, French, German, American or Japanese medicine."

Anæsthetics.

Dr. JOHN S. LUNDY (Rochester, Minn.) read a paper on agents and methods used for the induction of anæsthesia in the Mayo Clinic from 1922 to 1928. Local anæsthesia alone or in combination had been employed, he said, in more than half the operations performed. The use of chloroform had been discontinued and had been supplanted by ether. The custom of giving ether by the semi-drop open method was decreasing, but there was an increase in its use through the anæsthetic machine. Dr. Lundy laid stress on the good results obtained with acetylene at the Mayo clinic. "With acetylene," he said, "it has been possible to produce anæsthesia and relaxation, with quiet breathing, without anoxæmia and without the necessity of adding ether." Besides ethylene, there had been an increase in the use of nitrous oxide, ethyl chloride, and carbon dioxide.—In a paper on anæsthesia for operations in the lower part of the abdomen Dr. Lundy said that the choice of anæsthetic was of less importance for the lower than the upper abdomen, but open ether was probably the method of choice. Nitrous oxide and ethylene, especially with ether, was often frequently indicated. It was with operations in this area that spinal anæsthesia found its greatest usefulness. "Surely," he said, "there is no place in anæsthesia for any method to be used as a routine, and with so great a variety of agents and methods at one's disposal there is no acceptable excuse for fitting the patient to the anæsthetic rather than the anæsthetic to the patient."

In the course of a further paper Dr. Lundy referred to the derivatives of barbituric acid, and especially sodium iso-amyl-ethyl-barbituric acid, generally known as amytal. Apart from its other uses, it appeared to be of great value in sea-sickness.

He reported the use of this drug in 1000 surgical and non-surgical conditions. In 617 surgical cases there was little if any delirium, rarely any nausea, and no difficulty with respiration; in the non-surgical cases amytal was used for such purposes as controlling convulsions—e.g., tetanus, hiccup. It was used with carbon dioxide and oxygen in these cases. Amytal was also of value in the treatment of post-operative psychoses and delirium. Following operation after the use of amytal, sleep lasted from 12 to 72 hours. After discussing the disadvantages, which seem to result largely from large doses, he stated that the barbiturates had many practical uses.

Urogenital Surgery.

Mr. S. HARRY HARRIS (Sydney) reported that he had performed suprapubic prostatectomy with complete closure in 104 out of 112 consecutive prostatectomies, included in which were 15 two-stage operations. Of the 104, two patients died, one of pneumonia and the other 48 days after operation. Of the 112 cases, post-operative suprapubic drainage was necessary in eight. Complete control of hæmorrhage was accomplished by suture; further, obliteration of the prostatic cavity and reformation of the prostatic urethra was performed. He thought that "the comfort of the convalescence from the patient's point of view, and the simplicity of the nursing, are in marked contra-distinction to that usually experienced after the usual method of suprapubic drainage."

Mr. J. JENKINS (Dunedin) read a paper on the diagnosis and treatment of stone in the ureter. He said that after clinical and radiographic examination,

investigation should be done under spinal or caudal anæsthesia.

After cystoscopy with an indirect cystoscope, this is changed to a direct instrument and a wax-tipped catheter passed along the ureter well lubricated with oil. This is passed beyond the stone, and if possible several catheters are then passed. The wax bulb is now withdrawn until it comes into contact with the calculus. With the stone thus gripped, intermittent elastic traction is applied by fixing a rubber band at one end to the catheters and to the leg at the other end. After two to three days the catheters work down with or without the stone; if without, the process is repeated a week or ten days later. If it is impossible to pass a catheter or bougie beyond the stone, several attempts are made, and, if still unsuccessful, operation is performed. If infection is superadded to obstruction, operation should be performed at the earliest possible moment. One tends to operate early, if the stone is very large, is impacted high up in the ureter, or infection of the kidney is present.

Dr. ALEXANDER PEACOCK (Seattle), speaking on the treatment of the neoplasms of the bladder, commented on the growing tendency to regard all neoplasms of the bladder as potentially malignant. Electric coagulation applied through the cystoscope seemed to be the most efficient treatment so far devised.

Fractures.

In a symposium on industrial surgery, Dr. L. L. GOODNOW (Washington) pointed out that fracture of the spine and skull were not always treated satisfactorily. In fractured spine all cases which did not clear up quickly should undergo laminectomy; fixation should be done at the same time by inlay graft. Lumbar puncture was indicated if operation was not done. In fractured skull the quantity of fluid removed by lumbar puncture should not be sufficient to reduce the pressure more than one-half at any one puncture. Compound fracture of the skull, as a rule, caused less temporary and permanent disability than the moderate so-called closed fracture. All depressed fractures should be elevated, and decompression should be performed in chronic œdema of the brain and all severe concussions with elevation of intracranial pressure. In another symposium Dr. L. R. CHANDLER and Dr. J. T. WATKINS (San Francisco) communicated a paper on non-union. This paper was an appreciation of the work of the late John Cowan of San Francisco.

The essentials of Cowan's operation are: to elevate the periosteum for a short distance on either side of the fibrous bond; to remove the fibrous bond; to open up the medullary spaces of the end of the fragments; and to prevent the recurrence of fibrous tissue ingrowth between the fragments. This is done with a portion of rib, split into halves. The thin cortex of rib is rolled up into a band or cut into short segments and inserted under the periosteum, about the ends of the fragments at the fracture line, and the periosteum is closed. The operation has been performed on 47 patients; bony union has occurred in every instance except one.

Dr. EVERETT O. JONES and Dr. H. T. BUCKNER (Seattle) presented a paper on fractures of the pelvis. These fell into three main groups: fractures of the wing of the ilium, of the acetabulum, and of the pelvic ring. The authors of the paper said their practice was to put up fractures involving the acetabulum in a Whitman cast as for fracture of the neck of the femur. Fractures of the pelvic ring were treated in a double plastic spica for three months, except where there was upward displacement of one-half of the pelvis—when skeletal traction was applied to the femur—and in upward displacement with lateral spreading, caused by separation of the symphysis, in which a special method of suspension is used. Non-union of a pelvic bone was almost unknown, but failure of the symphysis to unite was very common, and a disrupted sacro-iliac articulation never became normal again. The paper was based on 40 personal cases, and the records of 312 cases. The mortality-rate (15 per cent.) was not high, but the final results were not "surprisingly good." In their series of cases 41 per cent. were left with some degree of disability ranging from 5 per cent. to total.

The Ear.

Dr. ROBERT PULLEINE (Adelaide), in a communication entitled An Insufficiently Considered Factor in Chronic Progressive Hardness of Hearing, said that snoring and blowing the nose, continued over a long period, resulted in gradual impairment of hearing. The primary cause was hereditary spur of the nasal septum, against which treatment should be directed. In the past this form of deafness had shared the bad prognosis of familial deafness, and has often been wrongly treated by routine inflation—the form of treatment most detrimental to it.

Dr. FRANK A. PLUM (Honolulu), summarising a paper on meningitis of otitic origin, said that delay was often caused by a diagnosis of meningism. Diagnosis must not wait upon appearance of a turbid fluid containing organisms, for the only chance of success depended on operation, which entailed removal of the focus of infection and drainage of the subarachnoid according to the route of infection. A careful bacteriological examination should be made of every mastoid operated on, and in pneumococcal and streptococcal infection the immediate use of serum was desirable. In diffuse cases, drainage, intracranial lavage, cerebral, cisternal and spinal, and Kolmer's intra-arterial medications are indicated.

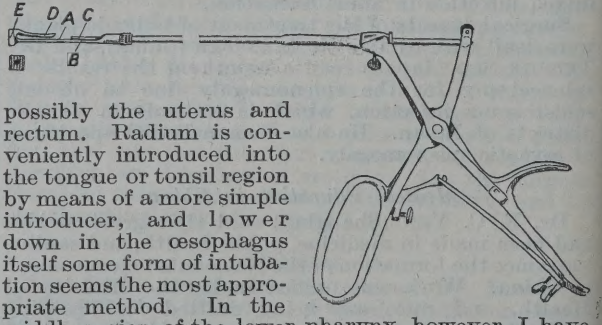
Dr. A. T. WANAMAKER (Seattle), in the course of an address on lateral sinus thrombosis, said that the Queckenstedt test was useful in diagnosing a mural clot, an obliterating clot, and narrow or absent lateral sinus on the non-infected side. A portion of the lateral sinus plate should be removed in all cases of mastoiditis with septic temperature. Experimental work on dogs had shown the value of not severing the jugular vein.

At the close of the Congress it was decided to hold a Pan-Pacific Surgical Conference at Honolulu every three years, the next to meet in 1932. Dr. George W. Swift was elected first President, Dr. Nils P. Larsen Vice-President, and Dr. F. J. Pinkerton Secretary.

New Inventions.

RADIUM-NEEDLE INTRODUCER.

I HAVE had constructed a radium-needle introducer for use in the less accessible parts of the pharynx (epiglottis, pyriform fossæ) and possibly the uterus and rectum. Radium is conveniently introduced into the tongue or tonsil region by means of a more simple introducer, and lower down in the œsophagus itself some form of intubation seems the most appropriate method. In the middle region of the lower pharynx, however, I have felt the need of an instrument which can be used through a direct laryngoscope, and the one shown in the illustration has proved slender enough for this purpose. Moreover, it affords a very accurate aim. The silk-threaded needle lies in the groove A in the shaft B, held down by a spring D and is propelled by a movable bar C through a countersunk opening in the square-ended, rough-surfaced foot-piece E which is held firmly on to the surface of the growth, all movements being slow and gentle to avoid damage to the silk thread.



The instrument is made by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

DOUGLAS A. CROW, M.B., Ch.B. Edin.

A SYRINGE AND NEEDLE FOR THE INJECTION OF HÆMORRHOIDS.

HAVING adopted the treatment of internal hæmorrhoids by the high submucous injection of 5 per cent. phenol in vegetable oil, as described by Albright and Blanchard, I have had made a modification of the original Graeme Anderson outfit as shown in the

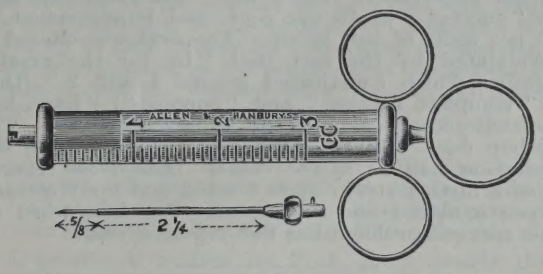


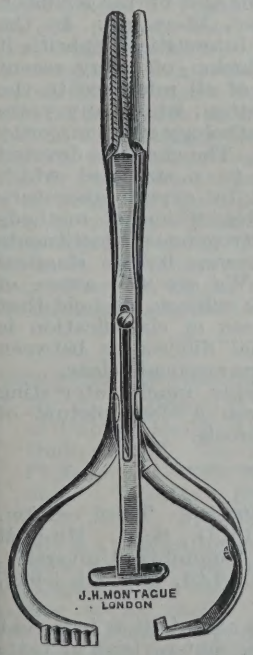
illustration. The syringe holds 3 c.cm and is graduated in tenths of a c.cm. The valuable bayonet fitting for the needle is retained which permits immovable attachment of the needle to the syringe. The base of the needle is bored out as wide as possible and a No. 20 standard wire gauge stainless steel needle is now fitted. The total length of the needle has been increased to 3¾ in. The syringe and two needles are fitted into a small case as before. I find that the oily solution, even when cold, flows very readily through this needle with quite light pressure, and the high injection of the solution in adequate doses in rendered easy.

The instrument has been made for me by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

W. B. GABRIEL, M.S., M.B. Lond., F.R.C.S. Eng.

A PROSTATECTOMY INCISING CLAMP.

As is well known, after the actual enucleation of a prostate by Freyer's method a shelf often remains, which if not divided, may lead to partial or even complete occlusion of the vesical outlet. Cutting it with scissors may result in further hæmorrhage, while tearing it with the finger is not only crude but in some cases impossible. I have, therefore, designed the instrument shown in the accompanying illustration. It is about eight inches long, has an outer or handle portion with a self-releasing rack, and an inner portion consisting of a clamp and blade. The inner end for clamping and cutting the shelf has flat serrated jaws, each of which is deeply grooved down its centre. When the clamp has been applied the blade is pushed down the grooves to the end of the instrument. In this way the partition is not only divided but thoroughly crushed on each side of the incision, the process taking only a few seconds, and very much minimising the possibility of dangerous bleeding.



The instrument has been neatly and skilfully made for me by Mr. J. H. Montague, of New Bond-street, W.

W. K. IRWIN.

Reviews and Notices of Books.

INTERNAL SECRETIONS OF THE OVARY.

By A. S. PARKES, M.A. Cantab., Ph.D. Manch., D.Sc. Lond., Beit Memorial Research Fellow, Department of Physiology and Biochemistry, University College, London. London: Longmans, Green and Co. 1929. Pp. 241. 21s.

TEN years ago a book written upon the internal secretions of the ovary might have contained as much theoretical discussion, but it could only have included a fraction of the experimental facts which form the basis of Dr. Parkes's monograph. The rapid growth of the subject, to some of whose developments we recently called attention,[1] has not made his task any simpler, but has added greatly to his difficulties. It is easier to review the value of past discoveries than to assess the importance of contemporary work; there is always the possibility that some point at present apparently insignificant may suddenly become the centre of the picture. This possibility has recently been illustrated in the inter-relationship between the anterior pituitary and the ovary. As long ago as 1901 A. Fröhlich pointed out the connexion between pituitary disorders and aberration of sexual function, but it was not until 20 years later that the work of H. M. Evans provided a sound experimental foundation upon which B. Zondek and S. Aschheim in Germany, and P. E. Smith and E. T. Engle in America, have built up quite an imposing structure during the last three years. Their labours show that the anterior pituitary hormone, exercising influence on the gonads of both male and female, plays a much more important rôle than was previously supposed. This is true of its effect on the ovaries with which aspect of its activities the present volume is alone concerned, quite apart from the great part which the anterior lobe has been shown to play in promoting general bodily growth.

Dr. Parkes has well fulfilled his duties as a contemporary historian, and this in itself is an achievement. But he has done more than this. The value of his book is principally due to the fact that its author is himself in the vanguard of the small army of workers who are actively engaged in research upon these problems, and has thus been able to exercise a wise discrimination in the selection of his subject matter. There are few statements in this book that cannot be proved by direct experiments. Theoretical considerations receive adequate consideration, but Dr. Parkes has them well under control. Essential arguments are stated briefly but clearly, and at each stage the experimental evidence in their support is critically surveyed.

The book starts with a brief account of the morphology of the glands, the reader being referred for a detailed description to special anatomical and histological treatises. A fairly exhaustive survey follows of sexual periodicity and types of œstral cycle in those species of the female mammal in which it has been sufficiently well investigated. This section is well illustrated, and will be found valuable, particularly by those who are themselves carrying out experimental work in this subject. The ovary as an organ of internal secretion is then considered generally, in a section which forms an introduction to the more detailed one dealing with the œstrus-producing hormone. This latter occupies some fifty pages of the book and is the best account of this subject available at the present time. No important contribution seems to have been omitted and all are clearly presented as part of a coherent whole—an entirely successful conclusion to what must have been an exceedingly intricate piece of work.

The final sections of the book deal first with the anterior pituitary body and then with the corpus luteum, considered in their relation to the ovary and

[1] THE LANCET, Nov. 23rd, p. 1109.

its function. Both these sections are well done, and the literature here, as elsewhere, is complete up to the end of last year. The final chapter on parturition will be of very general interest. For the selection of the bibliography of some 650 references we have nothing but praise, but this most valuable collection would have been made even more useful if the numbers of the page as well as the year and volume of the various journals had been included. The book is admirably produced and is illustrated by more than fifty excellently chosen photographs.

SURGERY.

Beiträge zur praktischen Chirurgie. By Dr. ALBERT KRECKE. Munich: J. F. Lehmanns. 1929. Pp. 1094. M.12.

THESE reports from Dr. Krecke's private surgical clinic for the years 1923 to 1926 inclusive are well worth reading. The 18 sections deal with almost every branch of general surgery, and many of them make very interesting reading. The author makes no startling new suggestions but he describes clearly his methods of dealing with everyday surgical problems. He reviews critically the results of different treatments and his deductions seem to be based upon sound logic. A valuable feature is an analysis of his failures, which are faithfully described without excuse or extenuation. The reader may not agree with all the author's recommendations and ideas on different surgical problems, but will inevitably ponder these views and consider whether his own need revision. Much that is here written is mere commonplace routine surgery; yet the records are worth the attention of any surgeon; for there are sure to be interspersed here and there interesting clinical facts of which he is unaware.

MOVABLE KIDNEY.

Second edition. By WILLIAM BILLINGTON, M.S., Ch.M., F.R.C.S., Senior Surgeon, Queen's Hospital, Birmingham; Professor of Surgery, University of Birmingham. London: Cassell and Co., Ltd. Pp. 177. 12*s.* 6*d.*

IT is 19 years since the publication of the first edition of this monograph. When it appeared the subject of movable kidney occupied much attention both in this country and abroad, but since then nearly every surgical observer has become convinced that nephropexy is an operation seldom required. Perhaps the pendulum has swung too far in the direction of abstention. Mr. Billington obviously thinks so, for he says "movable kidney may be responsible for seriously lowered efficiency of mind and body and for widespread and persistent functional disturbance." This is a conclusion reached after an experience of operations upon upwards of 1500 patients. The reader may reasonably inquire what increase of surgical knowledge has accrued from this unusual experience of a single operation. He must judge by reading this book. It contains some stimulating suggestions, as when the author attributes the symptoms of movable kidney to imbalance of the sympathetic and parasympathetic systems. "Chronic recurrent over-stimulation of the nervous mechanism whether from constant tugging as in movable kidney, or chemical as in retained products of excretion, produces permanent changes in the nerves and ganglia." Such an explicit statement seems to require some supporting evidence which is not here offered. The author does, however, say definitely that the urine in movable kidney often contains albumin, which disappears after the fixation of the kidneys. A valuable observation is that a large proportion of movable kidneys show some structural change. In the diagnosis of this condition it appears to be a little difficult from objective signs to say when a degree of mobility is abnormal. A pyelographic examination is surely of more importance than Prof. Billington is willing to concede. It does at least show when dilatation is occurring, with consequent changes in the renal substance. Such conditions are really signs of hydronephrosis and not only of simple renal mobility. "A growth of the colon may be easily mistaken for a movable kidney and vice versa," says Prof. Billington; but the symptoms and signs are so different that this must surely be an unusual mistake.

In order to get a true estimate of results the author asked an independent physician to investigate 163 of his 1500 cases. There was "complete success" or "success" in 43 per cent. and improvement in 25 per cent. of this group. The evidence offered is invalidated by the fact that "by far the greater number which constituted groups 1 and 2" (that is "complete success" and "success") "have had appendicectomy as well as kidney fixation." The author does well to emphasise the fact that the operation has no moral value. Indeed he regards it as a further strain upon a mind and body already over-stimulated and exhausted. The last word on this surgical problem has not yet been said.

ON NEPHRITIS.

By A. CECIL ALPORT, M.D. Edin., M.R.C.P. Lond., Assistant to the Director of the Clinical Medical Unit, St. Mary's Hospital, London. With an introduction by Prof. FREDERICK LANGMEAD, M.D., F.R.C.P., Director of the Unit. London: William Heinemann (Medical Books), Ltd. 1929. Pp. 175. 7*s.* 6*d.*

THE student will be somewhat disappointed in this book, after reading the excellent introduction by Prof. Langmead, for Dr. Alport in surveying the inflammation and degeneration of the kidney does not succeed in elucidating the confusion which surrounds their classification. From Chapter VI., dealing with the Degenerative Group or Nephrosis, no very clear conception of what the term "nephrosis" connotes is obtained, and the author makes no mention of the absence of all cardiovascular change in this condition. This is a grave omission, and in the chapter dealing with Subacute Parenchymatous Nephritis Dr. Alport fails to point out the essential distinction between cases of albuminuria and œdema with cardiovascular change and those in which such change is absent. The failure would be more understandable if these chapters were not enlarged by the inclusion of copious references to recent literature. In the chapter dealing with Chronic Interstitial Nephritis it is hard to reconcile the inclusion of many recent references with the omission of all reference to the classical work of Gull and Sutton, who many years ago laid down accurately the pathology of the majority of cases included in this book. The chapters devoted to biochemistry are not up to a standard which would be favourably received by expert laboratory workers; for example, the description of methods for the estimation of the nitrogenous constituents of the blood contain no reference to the classical methods of Folin and Wu. We are well aware of the difficulties surrounding the subject, but hold that the exposition of modern ideas of classification is only profitable if the essential differences between the old and the new conceptions are made clear.

Dr. Alport's survey contains much interesting material, but he has not given a clear picture of nephritis as distinct from nephrosis.

DIETETICS.

Chemistry of Food and Nutrition. Third edition. By HENRY C. SHERMAN, Ph.D., Sc.D. Mitchell Professor of Chemistry, Columbia University. London: Macmillan and Co., Ltd. Pp. xii. + 636. 12*s.* 6*d.*

The progress of the science of nutrition in recent years has necessitated the frequent revision of text-books. Prof. Sherman's book has been almost completely rewritten and now includes several new chapters as well as considerable additions to the valuable lists of references which are appended to

each chapter. This work is not a treatise dealing merely with the chemical composition of food and the mode of utilisation of foodstuffs in the animal body, but is a clear and connected account of the physiological principles concerned in the normal nutrition of mankind. It is intended primarily for those who are making a special study of nutrition, although it can be recommended also for those who are interested in a more general way in modern conceptions of the relation between diet and health. As an illustration of the difficulty of keeping a text-book up to date it may be noted that no mention is made of ergosterol as the precursor of the antirachitic vitamin, and the water-soluble vitamin B complex is still dealt with as a single entity.

A Laboratory Handbook for Dietetics. Third edition. By MARY SWARTZ ROSE, Ph.D., Professor of Nutrition, Teachers College, Columbia University. Same publishers. 1929. Pp. 269. 12*s.* 6*d.*

A handbook written by Prof. Mary Swartz Rose consists essentially of tables indicating the average chemical constitution of common foods in respect of well recognized constituents such as protein, fat, carbohydrate, calcium, phosphorus, and iron. The tables are preceded by instructions on how to use them to devise diets containing the required amounts of any of these constituents, together with the requisite energy values. The tables are designed so that all unnecessary calculations can be avoided, hence the amounts of the various food constituents are given not merely as a percentage of the raw or cooked food, but as the actual amount present in one gramme, one ounce, one pound, and one portion furnishing 100 calories of energy. The book has already proved of value to those engaged in constructing diets either for individual hospital patients or for healthy inmates of institutions. It should not be forgotten, in using a reference book of this kind, that even the most elaborate calculations of the dietetic needs of an individual are liable to many sources of error. In the first place the interpretation of the results of chemical analyses is not always a simple matter. For example, recent work done in this country on the carbohydrate content of fruits and vegetables makes it clear that considerably larger amounts of such foods may often be allowed to diabetic patients than would be calculated from the food analysis tables included here. Again, it is assumed in certain of the tables that we have a working knowledge of man's daily average requirements of mineral salts such as calcium, iron, and phosphorus. But on the contrary the body's needs for these substances vary enormously with other factors in the diet or environment, and it is clear that the giving of an accurately calculated quantity of each mineral element may not itself necessarily secure the desired physiological result. These criticisms do not affect the main usefulness of the book, which will enable diets of any particular character to be designed with the minimum amount of labour.

CHEMISTRY AND BACTERIOLOGY OF PUBLIC HEALTH.

By C. L. DUNN, C.I.E., D.P.H. Lond., Director of Public Health, United Provinces of Agra and Oudh; and D. D. PANDYA, D.P.H. Camb., Professor of State Medicine, University of Lucknow. Calcutta: Butterworth and Co. (India), Ltd. 1929. Pp. 412. 12*s.* 6*d.*

THIS is a publication primarily intended for students in India who are preparing for the Part I. Course of the Diploma in Public Health, and is a companion volume to an earlier work by the same authors entitled "Indian Hygiene and Public Health." Its scope is a wide one, embracing public health chemistry, bacteriology, and parasitology, and in the small compass of some 400 pages the student will find that most of the essential subject matter has been dealt with.

In the chemical section the practical tests are well chosen. A valuable section is that devoted to Indian milk products and substitutes. There is only a brief reference to British regulations for preservatives in foods, or to methods of estimation, and no mention is made of Royal Commission Standards for Sewage Effluents, or of the theory of action of natural waters upon lead. The small quantities recommended for some tests for water and the high dilutions for its bacteriological examination are no doubt connected with the low degree of purity commonly found in Indian water-supplies. Details of technique are not always correct, and this applies both to chemical and bacteriological sections. For example, phenolphthalein is recommended in the standardisation of sulphuric acid with sodium carbonate, and, again, methyl orange for acidity of waters, ignoring carbonic acid. In Winkler's method for dissolved oxygen a serious error would be introduced by the exposure in pouring before acidification; and it is stated that all vegetable oils have a clarifying temperature (Valenta test) above 80° C., and that the silver nitrate precipitate with CO_2 is insoluble in nitric acid.

In the bacteriological section, also, there are several misleading statements. For instance, the spore *B. anthracis* is contrasted with that of *B. tetani*, and only the former is termed an endospore. Such misstatements as those made on p. 249, giving the temperature range for cultures of *B. typhosus* as 40° C. to 46° C., and on p. 261, where for preventive inoculation a dose of "500 to 1000 units of *toxin* is advised," require correction. The discussion of agglutination in diagnosis is inadequate; such important points as the inhibition zone, variation in the agglutinability of suspensions, and delay in the appearance of agglutinins are not mentioned. In the description of typhoid agglutinations the series of diagnostic titres given show that the authors do not appreciate Dreyer's method, although they give it in detail. References to food poisoning and other pathogenic organisms in food, and to methods of isolation, are too brief. Four chapters are devoted to spirochæta, protozoa, animal parasites and hosts, and these contain much useful information, with classification of these organisms, and a detailed study of mosquitoes. The work suffers from the lack of illustrations which are really necessary for the study of all branches of hygiene.

It will be clear that the work can only be recommended as a text-book, where it is supplemented by practical laboratory instruction under capable teachers, so that defects in the descriptions and in the technique prescribed may be corrected verbally.

TUBERCULOSIS.

Laboratory Diagnosis and Experimental Methods in Tuberculosis. By HENRY STUART WILLIS, The Johns Hopkins University and Hospital. London: Baillière, Tindall and Cox. Pp. 330. 16*s.*

THIS is primarily a book on the laboratory diagnosis of tuberculosis, but since it is written from a very wide angle the reader is given a good understanding of the rationale of the methods adopted. Furthermore, Dr. Willis has been generous in his interpretation of the term laboratory diagnosis, so that much information is included, notably in Part 3, on tuberculin, which is not supplied in ordinary laboratory text-books. The book is divided into five sections. The first gives a general description of the various secretions and excretions which must be examined in the study of tuberculosis. The second deals with bacteriological diagnosis and includes the well-known staining reactions for the tubercle bacillus, concentration methods, animal inoculation, culture media, and so forth. It also contains two chapters worthy of special comment. One forms a useful summary of the three main types of tubercle bacilli with their characteristics and includes a suggestive section on the probable basis of acid fastness; the other is concerned with the non-pathogenic acid-fast bacteria, which are too often tactfully ignored in laboratory

manuals. The third part of the book is devoted to tuberculin, its preparation and its diagnostic application to tuberculosis. A welcome chapter describes the standardisation of tuberculin. The fourth part is devoted to the serological diagnosis of tuberculosis, and here a full description is given of the tuberculo-complement-fixation test. The other serological tests are described very briefly, rather less than four pages being devoted to them all, including the sedimentation-rate test. The reason that the author has not considered it worth while to give more space to their consideration is clear from his comment that, although certain of these tests are of value in prognosis, none is dependable for diagnosis. Perhaps nothing more damning could be said about them. The fifth part deals with histological technique; the whole process is traced from the technique of handling and fixing tissues to the various staining methods, and the types of stains suitable for different tissues are described. This part of the book also includes a careful account of the methods of animal inoculation for tuberculosis, together with a description of experimental tuberculosis as induced in various animals.

Numerous diagrams and illustrations of laboratory apparatus add to the value of this work, which supplies an equipment list for a tuberculosis laboratory compiled from the inventory of the laboratory of the Kenneth Dows Tuberculosis Research Fund. An adequate bibliography is appended.

THE ESSENTIALS OF HISTOLOGY.

Twelfth edition. By Sir EDWARD SHARPEY SCHAFER, F.R.S., Professor of Physiology at the University of Edinburgh. With the coöperation of H. M. CARLETON, Ph.D., Lecturer in Histology in the University of Oxford. London: Longmans, Green and Co. 1929. Pp. 628. 15*s*.

THIS most familiar of medical school text-books has again been exhaustively revised and brought up to date. Practically every section has received detailed attention in the process. The section on blood has been recast and much extended, and the appendix on histological methods thoroughly modernised. Many excellent new illustrations have been added, while few of the old ones have been discarded, so that the book is even more liberally illustrated than ever. Indeed, this liberality is carried almost to a danger-point, in that the authors have permitted the retention of some of the old figures which are hardly up to modern standards of photomicrography, and fall notably below the general high standard of the book as a whole.

One point arises out of the teaching matter, and this touches the question of the identity of the "proximal" renal tubule. Schafer remains a steadfast supporter of the claims of the second convoluted tubule to the title, while a large body of teachers now favour the first convoluted tubule. This is one of the questions which medicine has so far failed to solve.

DENTAL ANATOMY.

A Graphic Presentation of Tooth Forms with an Original Technique for their Reproduction. By M. DIAMOND, D.D.S. Associate Professor of Dentistry, Columbia University Dental School. New York: Macmillan Company. 1929. Pp. 300. 21*s*.

IN America the investigation of tooth forms has been developed in considerable detail, and the training of the student in many dental schools comprises the reproduction of the teeth in wax or other material. This book provides a detailed study of the naked-eye anatomy of the teeth which corresponds to the descriptions in text-books on osteology of every mark on the skeletal bones. There is no doubt that the macroscopic anatomy of the teeth is important, and that the dentist should be thoroughly familiar with the normal structure of the organs which he has to repair or closely to imitate. A book devoted to the subject can scarcely make light reading, and must be used as a laboratory manual rather than a text-book for systematic study. If it is used in conjunction with laboratory exercises in the carving of tooth forms it should prove useful. Presumably it was designed for this purpose, since considerable space is allotted to precise instructions for carving teeth out of blocks of wax. In view of the detailed descriptions of every cusp and fissure on each tooth, it is surprising that the author does not deal fully with the deciduous teeth other than the first deciduous molar. The idea that the deciduous teeth are only a replica in miniature of the permanent ones is widespread, but in many points their anatomy differs, and the five pages devoted to the deciduous dentition are inadequate. The value of conservative treatment of the deciduous tooth is now firmly established, and a detailed knowledge of their anatomy is therefore necessary. We trust that this defect in a useful book will be remedied in future editions.

INFANT WELFARE.

The Infant and Young Child. Second edition. By JOHN LOVETT MORSE, A.M., M.D., EDWIN T. WYMAN, M.D., and LEWIS WEBB HILL, M.D. London and Philadelphia: W. B. Saunders Company, 1929. Pp. 229. 9*s*.

THE intelligent public now demands authoritative and up-to-date information about its health and more especially about the health of its children. This book, by three well-known members of the staff of Harvard Medical School, should be popular, for it is well written, up to date, and thoroughly sound. In this new edition the sections on rickets and ultra-violet light have especially been revised and rewritten because in the authors' opinion there exists a great deal of misinformation about these subjects. New sections have been included on whole milk modifications, green vegetables, poor appetite, and sunshine. In many details the book is excellent and the authors are to be congratulated on their courage in including a small but wise section on the religious education of children.

OUTLINES OF ZOOLOGY.

Eighth edition. By J. ARTHUR THOMSON, M.A., M.D., Regius Professor of Natural History in the University of Aberdeen. London: Humphrey Milford, Oxford University Press. 1929. Pp. 972. 21*s*.

THIS excellent manual for students of zoology has now reached its eighth edition. Numerous original figures have been added, more account has been taken of the physiological aspect of the subject, and more space has been devoted to the structure and development of certain types, such as the Mud-fishes. As a manual for the zoology lecture-room, museum, and laboratory this book has a deservedly high reputation.

The medical and veterinary student will find the chapter on physiology valuable as a preparatory study for his future work. The chapters on morphology and embryology are presented in a readable style. Throughout the book the author links up general with medical zoology. He gives clear accounts of the malaria parasites, the coccidia, trypanosomes, and disease vectors. The details of the process of rumination (page 581) might have been given a little more precisely. We are told (page 220) that "the young fluke makes its way up the bile-duct and its tributaries" to the liver, whereas in fact it burrows its way through the bowel wall and penetrates Glisson's capsule to reach the liver parenchyma. It is this fact which makes the disease so disastrous.

In some places the nomenclature used is not up to date; for example, *Distomum hepaticum* is now generally called *Fasciola hepatica*, and *Eustrongylus* becomes *Dioctophyme*. The volume is well bound, clearly printed, and profusely illustrated.

THE LANCET.

LONDON: SATURDAY, DECEMBER 28, 1929.

AIR-BORNE INFECTION IN PUERPERAL SEPSIS.

IN the early days of the antiseptic theories air-borne infection as a factor in the causation of wound infections was given a prominent place; however, it gradually receded into the background and for a time was discarded, though not as whole-heartedly as the carbolic spray designed to counteract its dangers. The possibility that pathogenic organisms might reach the wound surfaces from the air was not entirely banished from the minds of surgeons, and thus, after a long interval, the face-mask was introduced and generally adopted at operations in order to lessen the risk of spray infections from the mouth and respiratory passages of the persons surrounding the patient. The adoption of a mask during the dressing of wounds and attendance on maternity cases has never become general, but in a recent paper on Air-borne Infection in Puerperal Sepsis[1] Dr. RICHARD ARMSTRONG brings us back to the original Listerian position, and, since the evidence produced is convincing, a wider use of the mask by accoucheurs and nurses should be encouraged. Dr. ARMSTRONG'S paper gives clinical data and a scientific basis for air-borne wound infections, and describes three epidemics of puerperal sepsis in two of which full bacteriological examinations were made of patients and their attendants. One of these epidemics took place some years before the other two, and no bacteriological investigations were made, but there was strong evidence that the resident medical officer was a carrier of *Streptococcus pyogenes*. The hospital records showed not only a higher incidence of morbidity during his term of office than in those of his predecessor and successor, but also a lull in the epidemic during his absence on holiday. He had a hæmatoma which suppurated, although the overlying tissues were intact, and, after his hospital appointment was over, developed erysipelas after a facial injury—both strong indications that he was a carrier. Besides these three outbreaks of puerperal infection, a smaller one of erysipelas in a surgical ward was studied by Dr. ARMSTRONG. Here the epidemic was traced to staff nurses responsible for the dressing of wounds, who were found to have streptococcal throat infections.

Dr. ARMSTRONG quotes other spray infections such as the one in the Aberdeen Maternity Hospital described in the ten-year maternal mortality investigation made by Dr. PARLANE KINLOCH; and the epidemic of puerperal fever in the Sloane Hospital, New York, recorded by WATSON and others, both of which support his thesis. From consideration of these, from observation of the origin and spread of other infections, and from animal experiments, he draws the conclusion that the rate of spread in air-borne sepsis is by geometric progression; each carrier infects several persons, and each of these a corresponding number, so that once infection is introduced into a maternity ward, all in it, mothers and attendants alike, become liable to harbour the organism though the maternal placental site is the most susceptible. On admission into an area in which the density of infection is already high, each batch of later and susceptible entrants meets also the increased bacterial virulence that is likely to follow the passage of infection from case to case, and hence the disease tends to assume a more serious form. There appears to be a period of three to five days between infection and the appearance of symptoms, and this incubation period is taken to represent the passage upwards from vulva to uterine cavity, probably by the suction of diaphragmatic respiratory movements. Since attendants and patients may both be infected by carriers and yet show no clinical signs of illness, prevention and detection of an air-borne epidemic in its earliest stages may not be easy, but Dr. ARMSTRONG has established a case for special precautions in maternity hospitals and wards. Prevention by the investigation and exclusion of all with sore-throats or other suggestive symptoms, by the wearing of face-masks, and by the early detection and isolation of both patients and attendants in order to lessen spread and the effects of heightened virulence, are clearly necessary precautions, and point to the need of a pathologist with adequate laboratory facilities attached to all institutions which provide maternity beds.

Precautions against air-borne infections must not, however, be allowed to dominate the situation, for, by themselves, they will not succeed in effecting a substantial reduction in the incidence of puerperal sepsis. Dr. ARMSTRONG draws attention to the greater mortality risk in streptococcal infections arising from operative interference and trauma, and quotes the result of a study of 2000 cases delivered in the extern maternity district of St. Bartholomew's Hospital where the morbidity-rate amongst the forceps deliveries was found to be increased tenfold. The introduction of infection during parturition is still the most important factor in the production of sepsis, and the avoidance of operative interference and trauma is the measure that will diminish the mortality from puerperal fever.

[1] St. Bartholomew's Hospital Reports, vol. lxii., p. 169.

GOOD FAITH AND REASONABLE CARE.

THE Court of Appeal has given an important decision in an action brought against two medical practitioners by a patient whom they had certified under the Lunacy Act. Not only is the decision significant in view of the attempt in Clause 16 of the Mental Treatment Bill to strengthen the protection afforded to the medical profession by Section 330 of the Act of 1890; it is also valuable as evidence of a welcome tendency on the part of His Majesty's judges to interpret the existing law in such a manner as not to deprive the doctor of a useful first line of defence. As the profession well knows, Section 330 declares that a doctor who takes any step in the certification of a lunatic is not to be liable to any civil or criminal proceedings if he has "acted in good faith and with reasonable care." The Section goes on to enact that proceedings may be stayed by the High Court or a Judge thereof if the Court or Judge is "satisfied that there is no reasonable ground for alleging want of good faith or reasonable care." It has never been an easy matter to obtain the aid of the Court under this latter provision. Judges are conscious that they must protect the liberty of the subject and must not lightly intervene between a plaintiff and a jury. The Court of Appeal's recent intervention is the more notable because of the terms used by Lord Justice SCRUTTON in expressing it.

Mrs. JANE EASTON, of Lancaster-gate, brought an action against Dr. WILLIAM ALEXANDER POTTS, of Edgbaston, and Dr. A. V. JOHNSON, of Aldridge, claiming damages for alleged negligence on their part in certifying her in 1926. The defendant doctors applied to have the action stayed on the ground that they had acted in good faith and with reasonable care. The Master, before whom the application first came in Chambers, was satisfied of their good faith but did not feel able to say that there was no evidence of a failure to use reasonable care. Mr. Justice FINLAY agreed with the Master. The Court of Appeal has reversed this view and has ruled that the defendants acted with reasonable care and that there was no evidence on which a jury could reasonably find to the contrary. Mrs. EASTON, at the material date, was on a visit to Staffordshire. The friend with whom she was staying took a serious view of her condition and sent for her sister. The sister agreeing, a doctor was called in. One of the first two doctors refused to certify; next day Dr. POTTS and Dr. JOHNSON certified Mrs. EASTON and she was sent to an institution for treatment. Evidence of her mental state can be gathered from the Lord Justice's judgment. She was, it seems, between 48½ and 50 years old. She had suffered from malaria and she admitted she was in a very depressed condition. A belief in hypnotism, telepathy or thought transference is, as the Court observed, no proof of insanity. This patient, however, seems to have had the delusion that people could, by hypnotic influence, have carnal intercourse without touching each other, and that a doctor whom she saw for the first time had in this spiritual fashion criminally assaulted her in London some years earlier. If a woman thought this, said Lord Justice SCRUTTON, no reasonable jury ought to find that she was not reasonably certified. He was also impressed by her belief that everybody had a sort of aura of smell; she had apparently told the doctor that she smelt him through the door; her letters and postcards, too, though the certifying doctors had not seen them at the time, would have been significant evidence to put before a jury.

Protection offered by Section 330 of the Lunacy Act has thus for once proved not less substantial than the medical profession originally believed it to be. There should, however, be no relaxation of the endeavours to obtain a further strengthening of it in the Mental Treatment Bill. The proposed new Clause seeks this object by throwing upon the plaintiff the burden of proving that the certifying doctor acted in bad faith or without reasonable care. Although English law has always insisted that this burden must be discharged by the plaintiff as a general principle, Section 330 of the Lunacy Act is so drafted as to suggest that the defendant doctor cannot avail himself of the statutory protection unless he positively proves his own good faith and reasonable care. The proposed amendment falls a long way short of the security to which the medical profession is entitled, but, for what it is worth it is a welcome instalment. Lord Justice SCRUTTON emphasised the importance of protecting those who, at the invitation of Parliament, fulfil a duty in the interests of the community as well as of the patient. "If any doctor certifying is to be exposed to the cost and danger arising after the event of judgment (by people who did not see the patient at the time) that the patient at that time was not of unsound mind, the only effect and the natural effect would be that no doctor would certify, and that the community, which is to be protected as well as the individual, would be exposed to the risk of having persons of unsound mind wandering about without adequate control to the danger of themselves and possibly to the danger of the community. We have had a series of cases in recent years showing the risks to which doctors are exposed by actions alleging that they have certified improperly either dishonestly or without due care. It is common knowledge that the result of these cases has been that many doctors will not certify at all. They would not run the risk of undertaking the duty Parliament seeks to put upon them." Other judges have used similar language, and Parliament should take note of the warning.

It is, of course, a difficult matter for one judge to say that there is no possible case for a jury when another judge has taken a different view. This difficulty was remarked by Lord Justice VAUGHAN WILLIAMS in 1913, when the Court of Appeal similarly overruled Mr. Justice ROWLATT in Shackleton *v.* Swift. But in the present case Mr. Justice FINLAY relied upon the affidavit of Dr. RISIEN RUSSELL, and Lord Justice SCRUTTON patently did not. Remarking that he intended no reflection upon Dr. RUSSELL in describing him as usually the principal witness for the plaintiff in lunacy cases, the Lord Justice observed that Dr. RUSSELL's affidavit said nothing whatever about Mrs. EASTON's case. Dr. RUSSELL had not seen her; he did not say he had seen the other doctor's affidavits; he said in general terms that a thorough physical and mental examination should always be made before certifying in a case of suspected insanity; he detailed an elaborate system of tests which he said should be applied. But, said Lord Justice SCRUTTON, a doctor coming to examine a patient in this way is not employed by the patient, and has no authority to conduct these detailed operations to all of which the patient would strenuously object. On this same point Lord Justice GREER added that if it were intended to lay down a general rule that no medical man can safely sign a certificate without carrying out all these tests enumerated in Dr. RUSSELL'S affidavit, "then I have no hesitation in saying that the affidavit ought not to be accepted by any court which knows anything about the matter." It was ridiculous, he continued, to suppose that a doctor could not without all those tests under any circumstances certify that a person should be placed under control. This common-sense and highly authoritative ruling may act as a corrective which has long been wanted.

CLINICAL RESULTS WITH ŒSTRIN.

THE progress made during the last few years in the study of the hormones of the ovary has recently been described in our columns. A longer survey made by Dr. A. S. PARKES is reviewed on p. 1367 of this issue of THE LANCET. The reason for the rapid advance is the development of methods of biological assay on the one hand, and of preparation and purification on the other, until at the present time it is possible to prepare very potent extracts from ovaries and placenta. To these sources must now be added the urine of pregnant women, a particularly rich source of the hormone. Not all material from these sources is active and it is therefore of the utmost importance that all clinical trials with these extracts of the ovary and placenta should be carried out upon biologically standardised preparations. The most definite and certain property of these extracts is their action upon the ovariectomised animal, particularly the mouse and rat, discovered by ALLEN and DOISY a few years ago. To ascertain whether any particular extract is active and to determine its potency, it is only necessary to observe whether it will restore the sexual cycle in the ovariectomised animal and to discover what dose is necessary to bring about this

result. The discredit attached to ovarian therapy in the past was due to ignorance of a reliable method of testing the activity of the preparations employed. Whether the use of standardised preparations will restore faith in this method of treatment depends on clinical results, which are not easy to assess. Mr. WILFRID SHAW[1] in this country and Dr. E. L. SEVRINGHAM and Dr. J. S. EVANS[2] in America have been trying respectively the oily and water-soluble preparations on a group of cases and have published their experiences which are encouraging though not conclusive. This is not surprising, for there is little analogy between the œstrus of the laboratory rodents, coincident as it is with the period of sexual activity, and menstruation in man and the higher primates; the difference is held to be connected at least in part with the functions of the corpus luteum. It is clear that in those patients in whom the deficiency, whilst it may be hormonal, is not primarily one of the œstrus-producing hormone of the ovary no effect can be anticipated. Moreover, the problem of dosage is not yet solved. If the correct dose is proportional to the body-weight, a woman with complete ovarian deficiency will require a dose of some 1500 rat units, an almost impracticable quantity. With the small doses available at present too much must not be expected. The distribution of the dose, however, can be controlled. The preparations used are of two kinds: oily and water-soluble. The earlier oily preparations suffer from the disadvantage that they are liable to give pain on injection, and SHAW refers to the severity of the local reaction produced. The fact that they are slowly absorbed, however, may be an advantage, since the effect of the dose is spread over an appreciable time. In animals a single injection of the aqueous preparation is much less effective than that of the same total amount of material given at frequent intervals. Aqueous preparations such as those used by SEVRINGHAM and EVANS are not followed by any local reaction, but they have to be given frequently, probably daily, to get the best results.

The hysterical tendencies associated with some of the conditions studied tend to increase the difficulties of the clinical work. In view of the fact that one of the most striking properties of œstrin is its action in promoting uterine growth in experimental animals Mr. SHAW examined the effect of the hormone in 15 cases of spasmodic dysmenorrhœa, with the typical ill-developed uterus associated with this condition. In six of these no improvement was observed, even when 50 units were given at weekly intervals; all were severe cases. In nine others the treatment was successful either in completely freeing the patients from pain or in alleviating it. The size of the uterus, however was increased only in two cases and in all the symptoms returned when the injections were stopped. The author recommends trial of the treatment in young women and where dilatation of the cervix is not successful. Not all cases respond, and if after eight weeks there is no improvement the injections should be discontinued. In five cases of primary amenorrhœa no definite effect was observed and menstruation was not established in any of the subjects. Two cases of amenorrhœa of secondary type also gave negative results. Both of these were combined with adiposity, and in each of six further patients who were not adipose menstruation followed the administration of œstrin. The results indicate that the treatment may be of value when the symptoms are of recent date. Other cases in which good results have been observed include women with irregular menstrual periods. According to SEVRINGHAM and EVANS, relief is also given in menopausal disturbances, particularly those associated with vasomotor phenomena, in which good results are reported in 10 or 11 out of 15 cases treated. Both the English and American investigators refer to the handicap of the lack of an objective index of ovarian activity in the human subject, a circumstance which together with the spontaneous improvement well known to occur in young patients, makes the scientific evaluation of any drug extremely difficult. The workers themselves consider the results obtained to be in many ways encouraging.

[1] Wilfrid Shaw: Observations on the Therapeutic Value of the Œstrus-producing Hormone of the Ovary, Quart. Jour. Pharmacy and Pharmacol., 1929, ii., 373.

[2] Sevringham, Elmer L., and Evans, Joseph S.: Clinical Observations on Use of an Ovarian Hormone: Amniotin, Amer. Jour. Med. Sci., November, 1929, p. 638.

Annotations.

"Ne quid nimis."

HOSPITAL ASSESSMENT.

WHY is it that the attempt to lighten the burden of rates borne by the voluntary hospitals has achieved so little success? The hope of total de-rating has been frustrated because it spoilt the symmetry of recent enactments framed by reformers who forgot the hospitals. The Central Valuation Committee's advisory functions have failed to achieve the uniformity in valuation which it is that body's statutory duty to promote. The Committee most helpfully suggested an equitable basis for assessing hospitals; it would have meant an advantage only less valuable than total de-rating; but the suggestion has been largely ignored and the utmost diversity of practice flourishes. The hospitals' prospect of swollen demands for rates is deplorable. The recent report on the Voluntary Hospitals in Great Britain [1] (excluding London) contains a memorandum on the present situation which makes gloomy reading. The revision of assessments consequent upon the Rating and Valuation Act of 1925 means that the provincial voluntary hospitals in England and Wales will have to pay £66,000 annually in rates where formerly they paid £44,000. It is a crushing imposition, unjust in its haphazard and anomalous incidence. Stated in terms of assessment per patient bed, the amounts vary from nothing at all in one place to £20 in another. Only 19 per cent. of the new assessments are less than £1 per patient bed; more than 12 per cent. are £5 and over. The British Hospitals Association has done its best. It has tried to obtain general support for a uniform and preferential assessment which would not exceed £1 per patient bed, such assessment to cover all those parts of the hospital that are necessary to enable it to carry out the purpose for which it is established. Unanimity in support of this reasonable proposal has been lacking. Many hospitals are willing to uphold it; a few favour independent action and other remedies. Meanwhile the financial prospect is uncertain and dark. Some local authorities are making contributions under the Public Health Act—that is to say, they take with one hand and give back with the other; this process may be satisfactory locally but it does nothing to solve the problem as a whole. If hospitals elsewhere have a greatly increased bill for rates, is the deficit to be met by a contraction of the hospital's facilities or by begging from generous donors whose charitable donations may be diminished in view of impending new taxation? There is general sympathy for the voluntary hospitals; nobody wants to see them unfairly harassed. Cannot some sensible formula be framed which will give them equitable treatment and which can be submitted to the valuation authorities with unanimous support?

THE BLOOD COUNT IN RHEUMATIC FEVER.

IT has long been recognised that rheumatic fever in children is associated with a mild leucocytosis, and the work of Swift and his collaborators[2] seemed to show that its degree bears some rough relationship to

[1] Tenth Annual Report for the Year 1928. Published by the Central Bureau of Hospital Information, 19, Berkeley-street, London, W. 1s., post free 1s. 5d.

[2] Swift, H. F., Miller, C. P., and Roots, R. H.: Jour. Clin. Invest., 1924, i., 197.

the severity of the joint manifestations. Could such a relationship be demonstrated in cases where infection falls rather on the heart muscle than on the joints, it might help us in gauging cardiac damage and the response to treatment. This possibility has recently been investigated by Dr. C. Bruce Perry,[3] working in the University Centre of Cardiac Research, Bristol. He finds that some degree of leucocytosis is common to all cases of rheumatic fever, whether the predominant feature is arthritis, carditis, or chorea. The presence of eosinophilia—which has been described as characteristic of the condition—is, he notes, associated with subsidence of the acute symptoms, and with the relative lymphocytosis which is seen when many kinds of infection are subsiding. As in most other infections, the increase of white cells in the more acute stage mainly affects the neutrophiles. The subacute and smouldering cases of carditis show only a slight and varying leucocytic response, and since it is just in these cases that an indication of the activity of the infection is most needed, Dr. Perry concludes that the leucocyte count can give us little or no assistance in measuring the progress of this disease.

X RAY APPARATUS.

To realise how rapid has been the growth and development of the X ray industry one had only to compare the exhibits at the recent annual meeting of the British Institute of Radiology with those of former years. High tension installations, radiographic and therapeutic equipment formed the three main groups of apparatus shown, and in each group there was a welcome tendency to simplification and standardisation in design. The X ray transformer has become more and more popular. The advantages of economy and freedom from contact troubles, associated with the inductive devices for the control of transformers, have no doubt led many to adopt the transformer instead of the resistance-controlled coil unit. With the erection of the grid system for the supply of alternating current to large areas, the use of the X ray transformer to the exclusion of direct current instruments would appear almost inevitable. It seems that the rating of a transformer in kilo-volt ampere hours is still widely used, although this unit is inadequate for the special requirements of radiology, and a specification for the electrical performance of transformers for X ray purposes was issued more than a year ago by the British Electrical Standards Association. General acceptance of this specification by manufacturers would materially help the buyer of high tension equipment. As a means of rectifying the current from a transformer the mechanical rectifier is fast disappearing. The majority of the transformer units of to-day are fitted with valves, the noiseless rectification of which appeals to the radiologist. Accumulated experience in the manufacture of valves has led to the production of a rectifier which, though expensive, is generally claimed to have a long life. The insertion of high tension condensers in the secondary circuits of transformers is quite common especially in deep therapy units. By means of condensers and an ingenious switch-gear some manufacturers have produced a plant which will develop a heavy milliamperage at medium voltages for radioscopy, or alternatively a small current at a high voltage for therapy. The exhibit of X ray tubes suggested that the gas tube has almost disappeared. The majority of hot cathode tubes shown were of the metalix type. The ray-proof shield which allows only a cone of rays to issue from the tube, together with the single central suspension of the latter, has led to simplification in the design of tube carriers, and supports for this type of tube are now made by most X ray firms. Attempts have been made to produce a shock-proof X ray apparatus, and a unit of this type for radioscopy was to be seen at the exhibition. In this case the transformer and tube were enclosed in an earthed metal tank which was mounted after the manner of an X ray tube. Apart from the advantage of being shock-proof, a greater flexibility of movement than is usually possible is claimed for this method of mounting both transformer and tube. A noteworthy feature of the radiographic equipment was the attempt made by some manufacturers to facilitate the taking of stereoscopic pictures in rapid succession. The stereoscopic binocular gives an excellent, though reduced, stereoscopic picture at any distance from a pair of stereoscopic radiograms placed side by side. To obviate the distortion often seen in earlier radiograms, most firms now incorporate in their equipment means whereby the X ray tube may be placed at a distance of six feet from the film. X ray manufacturers have sought to obtain greater flexibility and smoother travel of the movable parts of radiological apparatus, and the exhibits in general bore testimony to the success they have achieved.

[3] Perry, C. Bruce: Arch. Dis. Childhood, 1929, iv., 247.

THE ACTION OF LEAD ON THE CHORIONIC EPITHELIUM.

EARLY in 1925 a paper was published in the *Journal of Obstetrics and Gynæcology of the British Empire* by Prof. Blair Bell and others in which it was demonstrated that lead, in suitable doses of a suitable preparation intravenously administered, produced coagulation necrosis of the chorionic epithelium in the pregnant rabbit without damage to the maternal tissues—an effect not produced by the other metals tested. A subsequent investigation by M. M. Datnow, also a member of the staff of the Liverpool Medical Research Organisation, published in the same journal (1928, xxxv., 693), confirmed these findings, but showed that this property is more evident with certain preparations of lead than with others, and that in regard to all the preparations examined the chemotherapeutic index was not high. The importance of these observations was related to the working hypothesis of Blair Bell that malignant development in a somatic cell is a structural and functional reversion to the chorion epithelial type which is able to live independently and parasitically, and is in other respects also normally malignant, and that a toxic agent which will destroy the chorionic epithelium should—other conditions being equal—also be lethal to the cancer cell. The work at Liverpool has met both with support and criticism, the latter being no doubt often founded upon the results obtained from the employment of inefficacious preparations, but, until recently, there seems to have been no satisfactory attempt by independent workers to confirm or refute the clearly stated results obtained in Liverpool—results that, in so far as they were new, conflicted with previous views as to the manner in which lead causes abortion, of itself a well-known fact. In the recent issue, however, of the beautifully produced and illustrated *Archivio dello Istituto Biochimico Italiano*, edited by Prof. Lorenzini (1929, i., 193), N. Dallera has published with coloured histological drawings a considerable research on this subject, entitled "L'azione del piombo sulla cellula coriale," from which the work of the Liverpool School receives much confirmation.

Dallera, in his investigations concerning the abortive action of lead in rabbits, studied the action of doses smaller than those which provoked abortion, and ascertained the effects of different doses on the chorionic epithelium and on the placenta generally. In all the animals submitted to experiment the urine was examined, and subsequently a histological investigation was made of the liver and kidneys. Fifty-three animals between the eighth and twentieth day of pregnancy were used. Of these, 21 received injections of Christoni's colloidal sulphite of lead, chemically prepared. Twenty-five animals received the colloidal lead electrically prepared by Prof. Ganassini, with the addition of sodium thiosulphate, the action of which has been extensively studied by Prof. Lorenzini and Dr. Simon; to seven animals

Dezani's organic non-colloidal preparation of lead was administered. The following conclusions were reached: 1. Lead, when introduced intravenously into the pregnant rabbit in small repeated doses, shows a selective poisonous action on the chorionic epithelium. 2. The following changes in the chorionic epithelium, and further in the placenta are progressive, and depend on the dosage: (*a*) Swelling of the syncytial layer of the chorionic villi, with alterations of the protoplasm and consequent ischæmia in regard to the maternal blood-spaces of the placenta. (*b*) Necrosis of the syncytium with congestion of the placental blood-spaces. (*c*) Complete disappearance of the syncytium, breaking down of the supporting septa, and the production of hæmorrhagic areas with necrosis of the fœtal placenta. 3. The pregnant rabbit reacts to lead with toxic symptoms with smaller doses than when not pregnant. (Dallera did not attempt to define the abortion dose as was done by Blair Bell and his fellow-workers.) 4. There are no essential differences between the changes of the placenta in relation to the different periods of pregnancy. 5. The action of lead may not always be confined to the fœtal ectoderm, but some derivatives of lead may also affect the maternal organs to a degree that varies with different preparations. 6. The colloidal lead prepared at the Institute of Biochemistry of Italy acts chiefly on the placenta, and in order to produce slight temporary lesions in the liver it is necessary to inject doses four to five times greater than those which markedly damage the chorionic epithelium. (This preparation appears, therefore, to have a higher chemotherapeutic index than the preparations used in Liverpool.) 7. The metallic colloidal lead is that which best realises the essential postulate of chemotherapy—that is, the greatest divergence between the active dose and the toxic dose. 8. The distribution of the lead conveyed in different preparations varies. The colloidal lead localises itself specially in the placenta, and only in very heavy doses also in the liver (which, however, does not present any alteration). The lead sulphite and Dezani's soluble salt are found only in small quantities in the placenta, and in large amounts in the liver and kidneys with evident lesions in these organs. From these data it appears that the colloidal state of the lead is of great importance.

THE MORALE OF THE BLUEJACKET.[1]

A LITTLE book, described on its appropriately blue "jacket" as a social study of the lower deck, is worth the serious attention which its modest contents hardly claim for it. In a recent issue of THE LANCET we reviewed a study of the mental reactions of the sailors of the fleet in war by Dr. Thomas Beaton, himself then a Temporary Surgeon-Lieutenant, R.N., and thus possessing full opportunity for his investigations; and this skilled alienist concluded that "the training of the sailor has for its first aim the rendering of the individual, not into a precise automaton, but into a intelligent and coöperating personality, and in the achievement of its purpose it cannot be too highly praised"—in other words, the object of training was to turn out a good ship-mate, since incorrect conduct makes a man a bad ship-mate. How the education which has earned so high an encomium effects its purpose, what are its reactions in daily life on the lower decks of ships, we learn from Mr. Trystan Edwards's account of his three years' service wearing "the three rows of tape" on his blue collar as a seaman "for the duration" (1915–18). Judged even in comparison with the life of the public school and university man, he did not find the training wanting. It is disciplinary training, he says, which while it saves the seaman from carelessness and from panic in times of stress, gives him health, a sense of cleanliness, and steadiness of nerve, and makes him energetic and alert, as well as good-mannered. On the lower deck there is no word for good manners—they are a sine qua non; the few and new without them are called "ignorant," but it is charitably expected that they will soon acquire them. The author found the men habitually cheerful, often singing, working very hard, and always wanting sleep. And there is a significant comment that the men of exceptionally fine physique and character were nearly always from large families whose parents had both married young. He covets the bluejacket training for more of the youth of England, and concludes his important study thus: "Complete liberty and equality there can never be .....fraternity finds nowhere a greater measure of fulfilment than in the humane company of those who serve under the White Ensign." But it will surprise everyone, and especially parsons, to learn why it is the seamen like church on board (p. 123).

[1] Three Rows of Tape. By A. Trystan Edwards (ex-Able Seaman, R.N.). London: William Heinemann, Ltd. 1929. Pp. 167. 6*s*.

THE STUDY OF TROPICAL MEDICINE.

THE transactions of the seventh congress of the Far Eastern Association of Tropical Medicine appear in a volume[1] containing 97 communications which occupy some 871 pages. The chief subjects discussed are plague, cholera, dysentery, sprue and intestinal infections, bacteriophage, leprosy, tuberculosis, typhus-like diseases, leptospiræ, and malaria in all its aspects. To the section on plague such well-known authorities as F. P. Mackie, Wu Lien-Teh, Fabian Hirst, and N. H. Choksy appear. The Joint Meeting of the Expert Plague Committee of the League of Nations Health Organisation and of this Association stressed the importance of further inquiries into the methods of destruction of rats and fleas, the comparative epidemiological rôle of various species of fleas in plague transmission in selected areas in India, the survey of plague in wild rodents in Northern Asia, and the part played by grain and cotton in the dissemination of plague. As regards prophylaxis and therapeutics, the speedy preparation of antiplague vaccine, the possibility of producing a plague antitoxin serum, further studies on anti-plague bacteriophage and its practical application were considered. Pneumonic plague is dealt with separately in these Transactions; the incidence of bubonic plague, and its relation to pneumonic plague, is considered important, as well as the possible existence of a special ultra-virus or filter-passing form of *B. pestis*. The subject of cholera stimulated a number of communications. Lieut.-Colonel A. J. H. Russell is responsible for statistical studies in its epidemiology. C. L. Dunn and S. Khan show that cholera is not endemic in Hardwar, but is an accompaniment of pilgrimages. J. W. Tomb and G. C. Maitra, from experiences gained in Asansol Mining Settlement, believe that the non-agglutinating intestinal vibrios take on the agglutinating characteristic under certain still unrecognised conditions in the human intestine.

The dysenteries of Bengal have been studied by A. C. Ukil, who finds mild forms of bacillary dysentery to be the form most prevalent. F. P. Mackie, N. H. Fairley, and the staff of the Haffkine Institute, Parel, Bombay, contribute a report of progress on the sprue inquiry. P. Manson-Bahr, L. M. Maybury, and P. H. Martin testify to the therapeutic value of blood transfusion in sprue anæmia. S. S. Sokhey writes upon the pancreatic and liver functions in sprue. Special interest centres on the accounts of bacteriophagy and bacteriophage by F. d'Herelle. He sets out clearly his reasons for regarding the bacteriophage as a living being, an ultra-virus parasitic on bacteria and which provokes in them an extremely contagious disease. With Major R. H. Malone and M. N. Lahiri he believes that in the treatment of cholera with bacteriophage the cultures of this substance should be endowed with maximum virulence and maximum

[1] Transactions of the Seventh Congress, British India, 1927. Edited by Lieut.-Colonel J. Cunningham, C.I.E., B.M., M.D., I.M.S., Director, Pasteur Institute of India, Kasauli, British India; Chief Organising Secretary for the Seventh Congress. Calcutta: Thacker's Press and Directories, Ltd. Vol. II. 1929. Pp. 871.

activity. Lieut.-Colonel Morrison and Major C. de C. Martin state that bacteriophage alone has been proved as effective in the treatment of bacillary dysentery as is orthodox treatment given in control cases.

The leprosy section is particularly full. E. Muir propounds his latest views on the treatment with special reference to the employment of potassium iodide; R. Row amplifies his well-known work on the curative value of tubercle bacillary autolysate in leprosy; it must be remembered that it is still doubtful whether this action is specific or whether it is due to non-specific protein. E. V. Pineda contributes an important paper on the presence of the leprosy bacillus in 53 per cent. of the placenta and umbilical cord of advanced sufferers of the disease. R. Inada contributes a short comparative study of leptospiræ. R. McGuire writes on colour variations in the fungus of Dhobie's itch, and D. G. Panja believes he has cultivated the organism responsible for dandruff, which he has termed *Malassezia ovalis*. Typhus and typhus-like diseases also attracted much attention, notably from J. W. D. Megaw and C. Strickland. Under the section of Protozoology, R. Knowles and B. M. das Gupta have studied the influence of the thyroid gland on the course of a protozoological infection.

No less than 30 papers are devoted to the question of malaria, divided under three headings—control, general considerations, and treatment. Sir Malcolm Watson writes informatively on the future of malaria control in the Federated Malay States. Colonel S. P. James, Drs. W. D. Nicol and P. G. Shute have studied the habits of anopheles in relation to their rôle in the spread of malaria from observations made in England, and they have also made experiments on the treatment of malaria, from which it appears that thorough and prolonged quinine treatment of the primary attack has no more effect in preventing a true relapse than has intensive treatment by quinine during the acute phase.

A MEMORIAL TO JOHN THOMSON.

ON Saturday, Dec. 14th, a memorial to the late Dr. John Thomson was unveiled by Sir Thomas Barlow in the Royal Hospital for Sick Children at Edinburgh. The memorial takes the form of an inscribed marble panel with a bronze portrait medallion by Mr. Pilkington Jackson, placed opposite the entrance of Dundas Ward, where Thomson did such a large part of his work. In addition, a medal is to be awarded by the University of Edinburgh for a thesis or original investigation of special merit and dealing with children. Recalling Thomson's appointment in 1884 to one of the resident medical posts at the Hospital for Sick Children in London, Sir Thomas confessed that at the outset of their acquaintance he was not impressed by Thomson's personality, while some of his contemporary residents esteemed him but lightly. They little knew then what a reserve of quiet power, sound method, and good judgment lay beneath that modest, half-deprecating demeanour. A slight hesitancy of speech was the outcome of a resolute determination to cultivate accuracy of statement. Good botanist that he was, he had been trained in sound observation. When his two years at Great Ormond-street were completed and he returned to Edinburgh, Thomson was almost immediately appointed physician to the New Town Dispensary, where he soon developed a successful children's clinic, and shortly afterwards he was elected assistant physician to the Children's Hospital. His most important contribution to medical knowledge was, in Sir Thomas's opinion, his account of pyloric stenosis in infants; an exhaustive report of 100 cases under his own care during a series of years opened the eyes of medical men to the serious importance of its early recognition, and the vital indications for its treatment. In this as in all his work he was keen to share his knowledge in the give and take of real fellow workers. He was generous in acknowledging the help of his colleagues, whether older or younger; jealousy and self-advertisement were both unknown to him. Later in his career Thomson set himself to engage the interest of the mothers of mentally deficient children in simple methods of wakening intelligence and cultivating self-control. He was determined in his instructions to use no word or phrase which might discourage or humiliate the mothers, holding by the maxim, "By hope are ye saved." To those that knew him best, Sir Thomas concluded, the memory of John Thomson would always be that of a modest gentle true-hearted soul, with a passion for verification and a deep desire to widen the boundaries of beneficent knowledge. The same sentiments were expressed in other ways by Prof. G. F. Still, Dr. Logan Turner, and Dr. Robert Hutchison, who were also present to do honour to a great pædiatrician. In accepting the commemorative medal on behalf of Edinburgh University the Principal, Sir Thomas Holland, pointed out its economic as well as its humanitarian value. There was, he said, as yet no organised research into the psychology of the child under the age of five years, with the result that much harm was done in our schools through ignorance.

TREATMENT OF CATARACT AND GLAUCOMA IN MADRAS.

Lieut.-Colonel R. E. Wright's professional report[1] of the Government Ophthalmic Hospital, Madras, for the year 1928 will be of interest to ophthalmic surgeons everywhere. The average number of operations for senile cataract alone is over 1500 a year. Precautions to prevent squeezing on the part of the patient while on the table and to secure quiet afterwards include novocain injections to block the seventh nerve and into the orbit, and the drugging of the patient to such an extent as sometimes to amount to a kind of twilight sleep. Various forms of conjunctival bridge flaps have been tried during the year in order to maintain the lips of the section in contact, but the natives, it seems, are more liable to conjunctival bleeding than Westerners, and blood clot under the bridge sometimes interferes with healing. In Colonel Wright's opinion no form of bridge is so efficient as suturing the lips of the section. Various types of operation are performed, but in the great majority of cases the capsulotomy operation is chosen, usually with a peripheral iridectomy. In a proportion of cases Barraquer's intracapsular extraction is performed, a procedure not now popular in this country; but no mention is made of Colonel Henry Smith's intracapsular method.

In the Madras Hospital they classify all their primary cases of glaucoma, whether acute or chronic, into posterior segment types and anterior segment types. In the former the important factor is the increase in the volume of the vitreous; the anterior chamber early becomes shallow, but the cupping of the disc does not appear till late. In the anterior segment type, on the other hand, the anterior chamber is not shallow and cupping of the disc is an early symptom, and in these cases it is suggested the blocking of the angle of the anterior chamber takes a more important part in causation. A systematic investigation of 100 cases was undertaken along these lines, which may help towards resolving the perennial controversies. As to non-operative treatment or treatment preliminary to operation, eserine drops are the great stand-by, but in certain cases their effect was greatly enhanced by simultaneous employment of adrenalin. Glaucosan and amino-glaucosan are not so highly spoken of. In well-marked cases a decompression operation, preferably trephining, was always necessary eventually.

Elsewhere in the report there is reference to an epidemic of superficial punctate keratitis which occurred in 1928. Over 800 cases were seen before the end of that year. Like herpes febrilis it appears to be due to a non-filtrable virus, and is probably identical with the keratitis described by Herbert in

[1] Madras Government Press, 1929. Rs. 2.

Bombay in 1901, and by Kirkpatrick in Madras in 1920. The affection is known to Western ophthalmologists but not in an epidemic form.

AN IDEAL OPERATING TABLE LAMP.

WHAT the surgeon needs when he is operating is an illumination of the field, concentrated and yet practically shadowless, along with a high vertical component of intensity, ensuring penetration into deep cavities. The intense light must be confined to the wound area, but at the same time the room must be sufficiently illuminated to prevent difficulties from mal-adaptation of the eye. The high intensity should be produced without striations or glare, and the source of light should be as unobtrusive as possible. At a meeting of the Illuminating Engineering Society, held at the Home Office Industrial Museum on Dec. 10th, Mr. Ernest Stroud described a special unit designed to fulfil all these conditions. It consists of a number of prismatic plates formed into a panel or false ceiling of relatively large area. The construction of the plates is such as to refract the light rays which reach them into a converging beam of high intensity. Each plate is 12 in. square, and made up of quarter-concentric prisms, and four plates are grouped into one large lens 24 in. square of 12 in. focus length. The complete unit contains 15, 18, or 21 of these 4-plate groups, its dimensions being 6 ft. wide by 10, 12, or 14 ft. long. Over each group of plates is fitted a lamp and reflector in such relation to each other that the maximum beam strikes the centre of the operating area; thus with a 15-group system the combined 15 concentrating beams coming from different directions build up and focus their rays over the predetermined area. The method differs from a reflector system in the largeness of the area whence the light comes, which secures adequate diffusion, avoids harmful shadows, and absolutely avoids glare. The overflow from the lens system gives sufficient general illumination to avoid contrast glare, and the optical characteristics of the lens are such as to allow for the varying thicknesses of bodies and heights of tables. With a 15-lens system employing 15 lamps of 150 watts each, or 2250 watts in all, the maximum horizontal illumination is 1050 ft. candles, on a plane 45° from the vertical it is 725 ft. candles, and on a vertical plane facing the centre of the table 175 ft. candles; these high intensities being developed without any semblance of glare. The smooth sides of the glass plates are towards the source of light, and since the complete unit can be totally enclosed so as to form the ceiling of the operating theatre there need be no collection of dust and no obstruction projecting into the operation theatre.

A SCULPTOR OF YOUTH.[1]

A BEAUTIFUL book has recently appeared describing the work in marble and bronze of that accomplished sculptor, Tait Mackenzie, a professor in the medical school of the University of Pennsylvania. The importance of Tait Mackenzie's sculpture lies in the fact, as Mr. Christopher Hussey says in a critical résumé of Mackenzie's work, that we have here the first considerable attempt since the marvellous accomplishments of Athens to take for the sculptor's main subject the athletic ideal. For many years before his present appointment Mackenzie was director of physical education at McGill University, and in 1894, when he first occupied that chair, he had made few or no attempts in sculpture, though undoubtedly it was then that he was receiving the formative influences which enable him to-day to express his ideals of motion and rhythm in the human body. When, as now, athletics occupy so prominent a place in educational life it is certain that the Greeks have once again shown the way to great accomplishments for those who have the necessary receptive attention, instruction, and fine thought. The contents of Mr. Hussey's book consist largely of excellent representations of Mackenzie's best known work, with a running commentary of appreciation which though enthusiastic appears always to be justified. While the large imaginative groups will command most of our admiration—and rightly so—medical men will be interested in the portrait medallions, for they include representations of, among others, William Osler, Crawford Long, Wilfred Grenfell, Chevalier Jackson, Robert Jones, Weir Mitchell, W. W. Keen, and Charles Brockden Brown. Brockden Brown's chief claim to public interest is that he is always cited as the first American novelist, with the funny suggestion that he imitated William Godwin, but medically speaking he is remarkable in that he wrote in "Arthur Mervyn" a wonderful description of an epidemic of plague from personal observation of the horrors that fell upon Philadelphia at the end of the eighteenth century.

[1] Tait Mackenzie, a Sculptor of Youth. By Christopher Hussey. London: Country Life, Ltd. 1930. Pp. 107. With 14 figures and 91 plates. 25s.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LVIII.

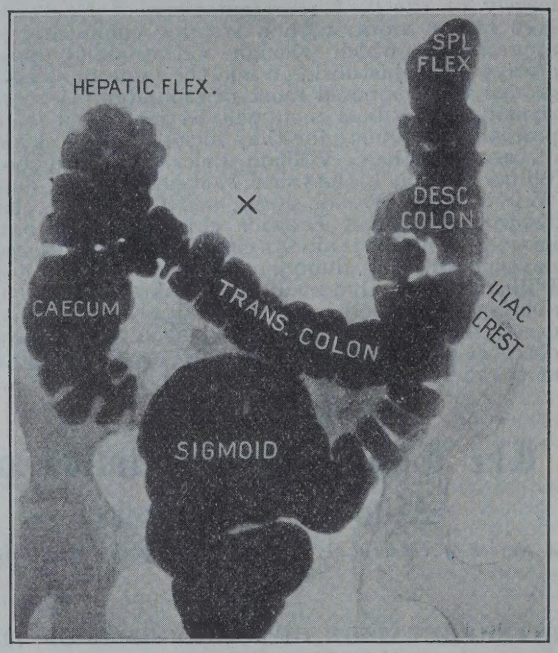
INTERPRETATION OF RADIOGRAMS OF THE ALIMENTARY TRACT.

PART V.*—LARGE INTESTINES.

THE food arrives in the cæcum in about four hours and should be somewhere near the splenic flexure in nine hours, but the times at which it arrives at different parts are so extremely variable that even approximate figures are far too definite. The normal colon as seen after feeding with barium is shown on Fig. 23. A typical picture of a normal colon distended by an enema is shown in Fig. 24. Individuals vary to an amazing degree, and even yet the movements of the large intestine are not clearly understood. There is no peristalsis in the ordinary sense and the shadow of the food in the colon remains inert hour after hour. Wingate Tod, using serial films over a long period (a very risky procedure for the subject), thinks that he detects a very slow rhythmic peristaltic movement which we certainly do not detect on screen examination. Whether it is or is not present, however, the main factor in the movement of food through the large bowel is one that is unique and is not comparable to any other in the body. It is difficult to obtain observations, for the movement occurs only occasionally, at no fixed time, and without the slightest subjective sensation. What we observe is that the haustral shadows, the divisions in the intestinal shadow, disappear and that, quite suddenly, the whole column makes a forward rush, usually from the region of the hepatic flexure, the column passing quite rapidly on, perhaps as far as the sigmoid or even to the rectum. Sometimes there is a partial rebound, but within a minute or so the haustral segmentation has again appeared and it is once more a picture of still life. Movements such as this—mass movements as they are called—occur perhaps three times a day, but we do not know, for we only detect that they have occurred by the completely altered disposition of the shadows. The first mass movements that were seen were estimated to have occurred in three seconds, but later observations suggest a quarter of a minute as a more usual time. Naturally, therefore, the rate of progress through the large bowel cannot be gauged accurately. The limits of the normal, which are wide enough in the stomach, become wider and wider as we go further down the alimentary tract until in the large intestine

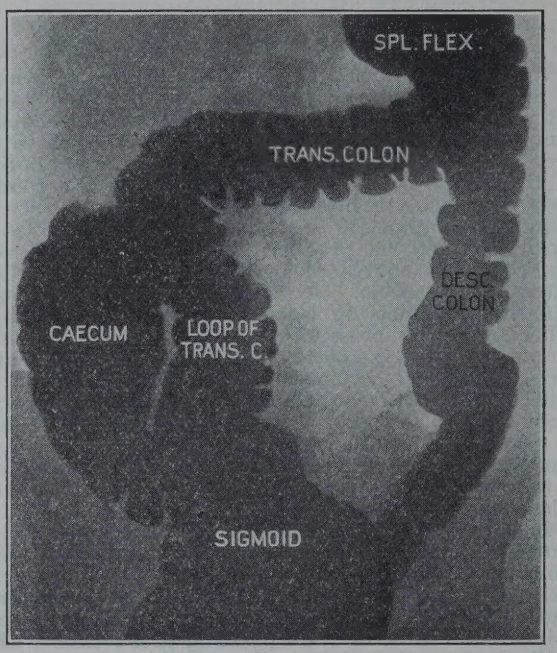
[1] Parts I., II., III., and IV., respectively on the Œsophagus, the Stomach, the Duodenum, and the Small Intestine with the Appendix, appeared in THE LANCET of Nov. 30th, Dec. 7th, 14th, and 21st.

FIG. 23.



Well-filled large intestine. Note the haustral segmentation. The hepatic flexure is rather higher and the splenic flexure rather lower than usual. The transverse colon is looped down over the descending colon. Such a loop is more common on the right than on the left—there is nearly always more or less of a loop. The ascending and descending parts of the splenic flexure are superimposed. The cæcum is not well filled—note the close anatomical relationship between the loaded sigmoid and the cæcum.

FIG. 24.



Normal colon distended with a rather large enema. Note the big loop of the transverse colon that drops down over the cæcum. The shadows in the right iliac fossa are blotted out by this loop. The haustral segmentation is usually not noted just after the enema is given but is noted within a few minutes—as the colon accommodates itself to the enema and as the discomfort passes off.

FIG. 25.

FIG. 26.

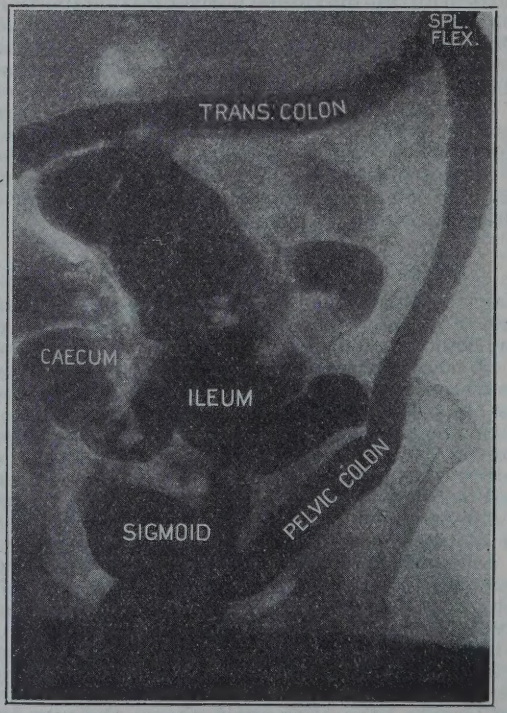


Fig. 25 shows "string" sign of colitis of the transverse colon. In Fig. 26 the opaque enema has flowed through the length of the colon and a portion of it has passed into the coils of small intestine. The "ribbon" appearance of the colon, with its absence of haustral segmentation is often associated with some forms of colitis. It is not pathognomonic, and in many cases disappears after an interval, especially if the bowels act.

FIG. 27.

FIG. 28.

Fig. 27 shows a growth of large intestine after a barium meal, and in Fig. 28 the same growth is seen radiographed after an opaque enema.

they are almost impossible to define, making the study of constipation one of the most tricky and treacherous of subjects. Our very foundations are a quicksand of possible variables in which we make marks for our guidance—four hours to the cæcum, four and a half hours to the hepatic flexure, and so forth, but we know quite well that we shall be doing an injustice to any patient if we erect the structure of our diagnosis on such flimsy foundations. In the study of constipation, therefore, we can only accept definite extremes as our guides—incidentally never accepting the patient's statement as to whether he or she has had a satisfactory motion. On numerous occasions patients have stated that they have only had a very small motion when observation has shown that the whole of the opaque food has passed out. And sometimes they give the same reply on the following day, when we know that everything they have eaten between the two opaque meals has been voided within 24 hours. The number of patients who have an obsession as to bowel movement is not small.

We have been drilled into imagining that a movement of the bowels once in 24 hours is the normal habit to acquire, although certain extremists are nowadays trying to persuade us that this is not sufficient. But the fact of the matter is that there are extremely wide variations and what is normal for one subject is not necessarily normal for another. Two or three stools a day may be normal for some individuals, while others may live to as ripe, happy and healthy an old age on one evacuation a week. Such cases are, of course, rare, but I have seen one rosy-cheeked girl whose habit was one a month.

In the study of *constipation* we thus have to depend on following through from day to day and determining where the delay is occurring and why. Three types can be noted, namely: 1. Where the cæcum remains filled, and is of the large, sloppy type. 2. Where the food gets into the large intestine and remains inert for days. 3. Where the food reaches the rectum but there is no call to stool (dyschezia).

There are many forms of *colitis*, and there are no typical X ray pictures, with the single exception of what is known as the "string sign," that is, a string of opaque food running along the lumen of the gut (Fig. 25), but this is only seen in certain cases. There are various other appearances, none of them typical, which cannot be discussed in a brief space. The "ribbon" appearance of the colon which is often associated with colitis, but is not pathognomonic, is shown in Fig. 26.

Growths.

Growths of the large intestine may remain latent for long periods before giving symptoms. Obstruction is often the first, and probably the only, sign. The opaque food given by the mouth may fail to be held up at the obstruction. In the early stages we may find the affected area partially filled with traces of opaque food, lying in inequalities of the canal, but one can deduce nothing from the absence of such shadows. It is only in the latest stages of an obstructive lesion that the opaque food is held up actually behind the growth—apparently the food is thrown back either by the associated spasm or by the rebound when the mass movement takes place. Whatever the mechanics, however, the fact remains that it is only in the latest stages that the gut immediately behind the obstruction becomes distended and allows the opaque food to gather in it.

The picture of scattered air spaces, bounded below by fluid lines that indicate extending back pressure from an obstruction has already been referred to under the small intestine—it is obviously a case for the surgeon and the sooner he deals with it the better.

FIG. 29.

Diverticulitis. Note the small "currant" shadows left in pockets. These are usually left filled or partially filled after the bowels have been emptied.

A number of fallacies in interpretation have given rise to many mistakes, the main one being the obstruction to the flow of the enema that may be caused by the brim of the pelvis or other bony projections. By raising the pelvis and other posturing this difficulty can usually be overcome. A pint of enema fluid should flow easily as far as the splenic flexure and even beyond. With two pints it is usually possible to fill the whole of the large intestine. Definite obstruction at a certain point, coupled perhaps with the presence of a tumour, makes the diagnosis of a growth reasonably certain. Fig. 27 shows a radiogram of growth of the large intestine after an opaque meal. Fig. 28 shows a radiogram of the same growth taken after an opaque enema. The presence of filling defects must be looked for throughout the whole length, more particularly, in my experience, in the region of the splenic flexure. Rotation of the patient is always necessary to show this flexure properly—it may, however, be difficult to get satisfactory photographic records in this position. There is one fallacy connected with the palpation of thickening of the colon which should be pointed out—namely, that one can frequently palpate the pelvic colon as a sausage-shaped mass which is not always present, and seems to be due to an intermittent and painless spasm. Sometimes, at any rate, it appears to be associated with a chronic appendix, but what the connexion is I do not know.

The presence of *Hirschsprung's disease*, like that of an acute obstructive lesion, is indicated by collections of air and fluid, but the chronic clinical picture and the distended abdomen make the diagnosis clear. Incidentally some of these cases at any rate are not congenital, but are acquired, being due to some adhesion or thickening in the sigmoid or rectum. The X ray picture of these cases shows the large, distended and redundant colon. In extreme cases it would take several times the normal quantity of enema to fill the large intestine. There is no difficulty in getting the enema to flow and the obstructive lesion, if it is still present, is of a valvular type and only interferes with the downward passage of the fluid.

Diverticula of the large intestine (Fig. 29) are common and may give rise to considerable palpable thickening, but radiographically the presence of pockets of opaque material like currants, left around the intestine after the bowels have been moved, is quite positive evidence as to the nature of the condition. It is a curious fact that these pockets are much more certainly demonstrated by the residue of the opaque meal than by giving an enema. The appearances of a well-established case are quite typical, but in the early stages the diagnosis is not by any means certain or straightforward.

CONCLUSION.

As to the value of the opaque meal investigation—it depends entirely on the experience and skill of the man who conducts the examination. No elaboration of apparatus or perfection of technique in the production of X ray films can make up for lack of skill and experience in this highly specialised work in which a thorough knowledge of the medical problems involved is fundamental. The time has almost if not quite come when a surgeon should not open an abdomen, at any rate for certain lesions, unless the report of the radiologist is positive. The responsibility for operation or refraining is knocking more and more at the door of the radiologist.

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THE CITY DISPENSARY.—This old City of London charity, which dates from 1789, reports a deficiency of income over expenditure of £227 and, not for the first time a portion of the very small invested capital has had to be sold. The patients of the dispensary, who are attended free by an honorary medical staff, have made 12,707 attendances in the last two years. The Lord Mayor, who is President, is appealing for help.

Special Articles.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

ON Dec. 17th a meeting of the President and General Council of King Edward's Hospital Fund for London was held at St. James's Palace for the purpose of awarding grants to hospitals and convalescent homes, including the Thank-offering Fund Distribution.

The Prince of Wales, who was in the chair, read the following message:

Buckingham Palace.

"The King is glad to hear that King Edward's Hospital Fund is again able to distribute £250,000 and that the hospitals will also benefit so greatly by the Thank-offering Fund. His Majesty wishes the Council every success during the coming year.—STAMFORDHAM."

Continuing, the Prince said that if he took as his texts, first, the impressive little table at the end of the Distribution Committee's list of grants (see page 1382) and, secondly, the different sums of which the total was made up, he would have covered the chief activities of the Fund during the year. The ordinary distribution was again £250,000. Last year, when the Fund had reached the round quarter million, that sum was thought of as a mile-stone where it might be good policy to rest awhile, lest they went too fast and perhaps be forced to retreat; but the Distribution Committee's report showed that the work of the hospitals did not stand still and, if the distribution remained at £250,000 for more than two years, the hospitals would suffer. The Thank-offering Fund had enabled them to meet the increased demands of hospitals this year, but the continued increase in hospital work would have to be met next year by distribution beyond the £250,000. The Pension scheme for nurses and hospital officers now covered some 30,000 beds, but the growth of the scheme would mean larger grants from the King's Fund. The amount available from the Thank-offering Fund to the King's Fund was £220,000 and of this, £105,000 represented the splendid gift of "Audax" which would be invested. The special distribution of this fund included a large grant to the new King George Hospital for the extreme east of Greater London. But the £220,000 was only a fraction of the sums subscribed to Thank-offering Funds throughout the country. The whole of the 4 grammes of radium purchased with Sir Otto Beit's gift of £50,000 had been allocated among 20 hospitals, and they had this morning received for the Radium Fund £10,000 from Mr. Roger C. Parr, whom he thanked for his generous gift. After referring to the report of the committee dealing with the Local Government Act and the hospital system, His Royal Highness pointed out that coöperation between the King's Fund, the Teaching Hospitals, and the British Hospitals Association had been effected and a joint committee appointed to devise a representative Voluntary Hospital body for the consultations with the London County Council required by the Local Government Act.

The Prince closed his speech by thanking all those who had helped to carry on the work of the Fund during the year, mentioning especially Sir Cooper Perry, Chairman of the Distribution Committee, Mr. Eardley Holland, Chairman of the Radium Subcommittee, Prof. Russ, the technical adviser, Lord Donoughmore, Chairman of the Management Committee, who had also been treasurer of the Thank-offering Fund, Lord Luke, Chairman of the Revenue Committee, and, in connexion with the thanksgiving for the

King's recovery His Highness asked how could he omit to mention the name of Lord Dawson. He added that a testator, happily still living and vigorous and most emphatically anonymous, was, by his will, making the King's Fund the permanent landlord, so to speak, of a large house and grounds to be used as a convalescent home, and was setting aside a trust fund to help with its maintenance.

Treasurer's Statement.

Mr. E. R. Peacock (the hon. treasurer) said that the estimates laid before the Council in November justified a distribution of £250,000 for the second year in succession, but left no margin. Last year the cost of special pension grants was met from unexpected legacies received after the ordinary distribution had been fixed. This year the position was similar. A legacy of £29,000 had been received, and as the pensions grants amounted to £13,734, there was every reason to anticipate that they could be covered in the same way as last year. Invested funds had been increased by further sums of £7000 from the estate of Mr. Samuel Lewis and £1526 from that of Sir Julius Wernher, and by £15,000, the first of the seven yearly instalments of the gift of £105,000 from "Audax" through the Thank-offering Fund. Taking into account the additions made to general fund legacies since the date of the estimates, the receipts from that source amounted to £67,000, a figure almost exactly the same as that of last year. Annual subscriptions were slightly larger. But a smaller amount than usual had been received in donations this year. Every endeavour to ensure that the receipts from voluntary sources, which now came to £90,000 a year, must be fully maintained.

The League of Mercy.

Lord Marshall then made the annual statement on behalf of the League of Mercy. (The report of the annual meeting of the League of Mercy was published in THE LANCET of Dec. 21st, p. 1326).

Grants to Hospitals and Convalescent Homes.

The Chairman of the Distribution Committee (Sir Cooper Perry) presented the report of the Committee on the Distribution to Hospitals (including Recovery and Convalescent Branches). The report showed that 143 hospitals had applied for grants as against 141 in 1928. Ninety-four hospitals had joined the Pension scheme, as against 89 in the previous year. The total annual distribution amounted to £261,734, and when the Thank-offering Fund was added, the grand total reached £376,734. Of this, £239,799 was for maintenance, and £136,935 for schemes of capital expenditure, and it also included a grant for the building fund of the new King George Hospital at Ilford. The proposal for the provision of a single large hospital on the Ilford site, he said, was the result of the amalgamation of several schemes for providing for the needs of the increasing population of the eastern part of Greater London. It was drawn up at a series of conferences for which the King's Fund acted as convener, and in which representatives of the London County Council, the Ilford Hospital, and the local hospital funds of Barking and Becontree took part. The King's Fund made a grant of £10,000 out of the Wells legacies distribution on the understanding that the London County Council would contribute a similar sum. A grant of £2000 set aside for the extension of the Ilford Hospital had also been transferred to the building fund of King George Hospital. 2300 mg. of radium had been actually delivered to 15 hospitals out of Sir Otto Beit's gift, the remaining 1700 mg. were being delivered as fast as containers and needles could be supplied.

Lord Somerleyton (hon. secretary) presented the schedule containing the lists of awards to hospitals (including Recovery and Convalescent Branches) as follows.

*List of Awards.**

	£
Acton Hospital (of which £250 to deficit on extension)	951
All Saints' Hospital	78
Baby Clinic Hospital (Kensington) (of which £100 towards the acquisition and adaptation of new premises)	186
Beckenham Cottage Hospital	450
Belgrave Hospital for Children	1,709
Bermondsey Medical Mission Hospital	50
Blackheath and Charlton Hospital (of which £50 towards improvements)	221
Bolingbroke Hospital (of which £100 to deficit on new block)	2,218
Brentford Hospital (of which £150 towards additional staff accommodation)	267
British Hospital for Mothers and Babies, Woolwich	550
Bromley (Kent) and District Hospital (of which £200 towards extension)	375
Carshalton and District Hospital (of which £250 towards extension)	335
Catholic Nursing Institute	15
Central London Ophthalmic Hospital (of which £250 towards extension)	706
Central London Throat, Nose and Ear Hospital (of which £500 to deficit on extension)	866
Charing Cross Hospital (of which £500 towards new casualty department, &c.)	4,500
Chelsea Hospital for Women (including Convalescent Home at St. Leonards)	1,115
Cheyne Hospital for Children (including Country Branch at St. Nicholas-at-Wade) (of which £100 towards improvements at country branch hospital)	450
City of London Hospital for Diseases of the Heart and Lungs (Victoria Park)	3,664
City of London Maternity Hospital	1,304
Clapham Maternity Hospital	301
Connaught Hospital	1,556
Croydon General Hospital	1,068
Deptford and Greenwich Babies' Hospital (of which £100 towards rebuilding and extension on new site)	150
Dreadnought Hospital (Seamen's) (including Albert Dock Hospital, Hospital for Tropical Diseases, Sanatorium at Liphook, and Convalescent Home at Cudham)	1,525
East End Maternity Hospital (of which £250 to deficit on acquisition of adjoining building and its adaptation for nurses' quarters)	925
East Ham Hospital (of which £500 to reduce deficit on equipment of new general hospital)	1,545
East London Hospital for Children (including Convalescent Home at Bognor) (of which £250 to reduce debt)	3,336
Elizabeth Garrett Anderson Hospital (including Recovery Branch at Barnet) (of which £250 to deficit on reconditioning the existing hospital building in connexion with recent extension)	2,392
Eltham and Mottingham Cottage Hospital	50
Enfield War Memorial Hospital	350
Evelina Hospital for Children	1,296
Finchley Memorial Hospital (of which £200 towards new nurses' dining-room)	521
Florence Nightingale Hospital for Gentlewomen	311
Forest Hospital (Buckhurst Hill) (of which £100 to deficit on extension)	313
French Hospital	350
General Lying-in Hospital (of which £500 towards new nurses' home)	1,265
German Hospital	500
Golden-square Throat, Nose and Ear Hospital	495
Gordon Hospital for Fistula	89
Grosvenor Hospital for Women (of which £100 towards accommodation for resident medical officer and for nurses)	650
Guy's Hospital (of which £1000 towards provision of site for out-patient department extension)	12,818
Hampstead General and North-West London Hospital (of which £200 to deficit on new operating theatre and emergency beds)	3,022
Hampstead Hospital for Children (in consideration of the fact that curable cases are admitted)	200
Hanwell Cottage Hospital	50
Harrow Hospital (of which £200 towards extension)	375
Hendon Cottage Hospital	306
Hornsey Central Hospital (of which £150 towards new nurses' home)	386
Hospital for Consumption, Brompton (including Sanatorium at Frimley) (of which £200 to deficit on improvements)	1,587
Hospital for Epilepsy and Paralysis (of which £150 towards extension)	2,163
Hospital for Sick Children (including Country Branch at Tadworth)	4,378
Hospital for Women (Soho-square)	1,131
Hospital of St. John and St. Elizabeth (of which £200 towards nurses' home extension)	1,000
Hostel of St. Luke (of which £25 towards new larder)	125
Ilford Emergency Hospital	653
Infants Hospital (including Convalescent Home at Burnham) (of which £250 towards extension)	665
Invalid and Crippled Children's Society's Hospital (Canning Town)	500
Invalid Children's Aid Association Heart Hospital, West Wickham	300
Italian Hospital	300

* The Distribution Committee draw attention to the fact that it must not be assumed that the reduction or absence of a grant implies dissatisfaction.

	£
Jewish Maternity Home (of which £100 towards provision of clinical laboratory)	210
Kensington, Fulham, and Chelsea General Hospital (of which £250 towards extension)	351
King Edward Memorial Hospital (Ealing) (of which £200 to deficit on extension)	1,000
King Edward VII.'s Hospital for Officers	300
King George Hospital (see end of list)	
King's College Hospital (of which £100 towards improvements)	7,542
Kingston-upon-Thames Victoria Hospital	75
London Fever Hospital	600
London Homœopathic Hospital (of which £150 towards nurses' home extension)	1,908
London Hospital (including Recovery Branch at Reigate)	15,179
London Jewish Hospital (of which £100 to deficit on acquisition of adjoining site)	700
London Lock Hospital (of which £773 to Harrow-road Hospital and £397 to Dean-street Hospital, £250 of the latter being towards extension of out-patient department at Dean-street)	1,170
London Temperance Hospital (of which £750 to reduce debt, and £1,000 towards provision of new special departments and pay beds)	3,844
Marie Curie Hospital (of which £100 towards out-patient accommodation)	115
Medical Mission of the Good Shepherd, Babies' Home (Hoxton)	25
Metropolitan Hospital (of which £500 to deficit on nurses' home and accident wards)	4,444
Middlesex Hospital (including Convalescent Home at Clacton (of which £1,000 towards reconstruction)	9,119
Middlesex Cancer Hospital	1,205
Mildmay Memorial Hospital (of which £100 towards extension of maternity pay block)	400
Mildmay Mission Hospital	1,100
Miller General Hospital for South-East London (including Convalescent Home at Bexhill) (of which £1,000 to reduce debt, and £500 to deficit on extension)	5,869
Mothers' Hospital of the Salvation Army	650
Mount Vernon Hospital (Fitzroy-square and Northwood)	842
National Hospital for Diseases of the Heart (of which £100 to deficit on extension of out-patient department)	512
National Hospital, Queen-square (including Convalescent Home at Finchley) (of which £250 to reduce debt and £250 towards extension)	4,512
Nelson Hospital for Wimbledon, Merton, and District (of which £250 towards provision of maternity pay-bed block)	1,000
North Islington Infant Welfare Wards	75
Norwood and District Cottage Hospital	304
Paddington Green Children's Hospital (including Convalescent Home at Slough)	620
Passmore Edwards Hospital for Wood Green, &c.	152
Phillips Memorial Homœopathic Hospital (Bromley)	15
Plaistow Maternity Hospital (of which £250 towards extension)	850
Poplar Hospital for Accidents (including Convalescent Home at Walton-on-the-Naze) (of which £100 towards extension of X ray department)	325
Prince of Wales's General Hospital (including Convalescent Home at Nazeing) (of which £1,000 to reduce debt and £250 towards new out-patient department)	5,850
Princess Louise Kensington Hospital for Children (of which £200 towards further stage of new hospital)	600
Queen Charlotte's Maternity Hospital (of which £1,000 towards rebuilding and extension on new site)	2,703
Queen Mary's Hospital for the East End	4,644
Queen's Hospital for Children (including Convalescent Home at Bexhill)	4,019
Ross Institute and Hospital for Tropical Diseases (to the Hospital)	20
Royal Dental Hospital of London	320
Royal Eye Hospital	837
Royal Free Hospital (of which £1,000 towards extension)	7,424
Royal Hospital (Richmond) (of which £200 towards new operating theatre)	1,467
Royal London Ophthalmic Hospital (of which £250 towards provision of additional nurses' accommodation and wards)	2,963
Royal National Orthopædic Hospital (including Country Branch at Stanmore) (of which £250 to reduce debt and £500 to deficit on extension of country branch)	4,746
Royal Northern Hospital (including Royal Chest Branch in City-road, Recovery Branch at Southgate, and Convalescent Home at Clacton) (of which £500 to reduce debt and £250 towards provision of pay beds)	9,145
Royal Waterloo Hospital for Children and Women	2,820
Royal Westminster Ophthalmic Hospital (of which £500 to deficit on rebuilding and extension on new site)	1,296
St. Andrew's Hospital, Dollis Hill	303
St. Bartholomew's Hospital (of which £1,000 towards new operating theatres)	7,461
St. Columba's Hospital (of which £15 towards sun-blind for balcony)	431
St. George's Hospital (including Recovery and Convalescent Branch at Wimbledon) (of which £1,000 to reduce debt)	9,068
St. John's Hospital (Lewisham)	1,623
St. John's Hospital (Twickenham)	75
St. John's Hospital for Diseases of the Skin	302
St. Luke's Hospital for Advanced Cases	300
St. Mark's Hospital	484
St. Mary's Hospital	6,362
St. Mary's Hospital for Women and Children (Plaistow) (of which £250 to reduce debt and £500 to deficit on first stage of new out-patient department)	2,828
St. Monica's Home Hospital	125
St. Paul's Hospital	75
St. Peter's Hospital for Stone (of which £150 towards extension)	609
St. Saviour's Hospital for Ladies of Limited Means (Osnaburgh-street)	159
St. Thomas's Hospital	11,621
St. Thomas's Babies' Hostel (of which £100 towards new out-patient department)	125
Samaritan Free Hospital for Women (including Convalescent Home at Amersham)	1,337
Santa Claus Home (of which £25 to reduce debt and £20 to deficit on recent improvements)	120
Seamen's Hospital Society (*see* Dreadnought Hospital)	
South-Eastern Hospital for Children (Sydenham) (of which £400 towards new casualty department and pay beds)	1,235
South London Hospital for Women (of which £500 to deficit on new out-patient department)	1,682
Stoke Newington Home Hospital for Women	75
Streatham Babies' Hospital (of which £25 towards new sun-room)	50
University College Hospital (of which £250 towards extension of nurses' home)	9,187
Victoria Cottage Hospital (Barnet)	91
Victoria Hospital for Children (including Convalescent Home at Broadstairs)	2,671
Weir Hospital (Balham)	75
Wembley Hospital	100
West End Hospital for Nervous Diseases	1,538
Western Ophthalmic Hospital (of which £250 towards rebuilding)	553
West London Hospital (of which £250 to reduce debt)	5,336
Westminster Hospital	5,505
Willesden General Hospital (of which £500 to reduce debt and £250 to deficit on completed stages of extension)	3,074
Wimbledon Hospital (of which £200 to deficit on provision of children's wing)	700
Winifred House Invalid Children's Convalescent Hospital Home	25
Woodford Jubilee Hospital	105
Woolwich and District War Memorial Hospital	1,500
Special Grant.†	
King George Hospital Building Fund (towards first stage of new hospital)	2,000
Total	£261,734

Summary.

	£
Grants to hospitals (including recovery and convalescent branches) for the year 1929 out of the ordinary distribution, per list above :	
Ordinary grants	248,000
Special grants towards expenditure under the Federated Superannuation Scheme for Nurses and Hospital Officers	13,734
Total grants	261,734
Grants to hospitals, out of the special distribution of the Thank-offering Fund for the King's Recovery	115,000
Total grants to hospitals and branches for 1929	376,734
Grants to non-hospital convalescent homes	2,000
Total distribution for the year 1929, besides allocation of radium purchased with the gift of £50,000 from Sir Otto Beit	£378,734

Lord Ebbisham having seconded, the report was carried.

Sir Cooper Perry then presented the report of the Committee on the Distribution to Convalescent Homes not attached to particular hospitals, which stated that the number of applications eligible for consideration amounted to 53, as compared with 49 last year.

Colonel H. A. Wernher (hon. secretary) presented the list of awards.

Thank-offering Fund for the King's Recovery.

The Chairman of the Management Committee (the Earl of Donoughmore), in presenting the report of the Committee on the Thank-offering Fund for the King's recovery, said that he did so with profound thankfulness, and would like to say how much they had been encouraged all through by His Royal Highness's own great help and assistance at every stage of the work. He would like to emphasise the fact that the costs of collection had been nil.

The report showed the origin, history, and results of the Thank-offering Fund, and stated that it was realised from the moment the gift of "Audax" was received that the King's Fund could not by itself put forward a claim to be regarded as the sole channel for an expression of the feelings of the whole country, though the Committee pointed out that the hospitals

† See (supra) Distribution Committee's report.

of London were national institutions in the sense that they treated patients from all parts, and formed the largest centre of medical education and research. To this extent, and also because of its peculiar relation to its Royal Presidents, the King's Fund might be regarded as a national institution, but for the purposes of a thank-offering it was desirable that the public outside London should have an opportunity of selecting local charities; so provision had been made for earmarking contributions for local hospitals. The expenses were kept low, and would be more than covered by the bank interest on the money received while on deposit. The Management Committee recommend that an address be presented in the name of H.R.H. the President and the General Council to the King as Patron of the King's Fund, referring to the origin, history, results, and distribution of the Thank-offering Fund, and tendering to His Majesty their loyal congratulations on his recovery, and on his return to the full discharge of his high functions in Church and State.

Lord Luke, in seconding the recommendation of the report, said that the difference between the £113,397 contributed in addition to the gift of "Audax," and the £115,000 distributed, was, like the expenses, covered by the interest received.

Mr. Leonard L. Cohen (hon. secretary) presented the list of awards as follows:—

	£
Acton Hospital (to reduce deficit on extension)	750
Baby Clinic Hospital (Kensington) (towards the acquisition and adaptation of new premises)	150
Belgrave Hospital for Children (to enable the hospital to extinguish the deficit on the completed stages of the extension)	1,000
Bolingbroke Hospital (towards provision of new block)	150
Brentford Hospital (towards provision of additional staff accommodation)	250
British Hospital for Mothers and Babies, Woolwich (to reduce deficit on the completed stages of the new hospital)	1,500
Bromley (Kent) and District Hospital (towards extension)	300
Carshalton and District Hospital (towards extension)	250
Central London Ophthalmic Hospital (towards extension)	750
Central London Throat, Nose and Ear Hospital (to reduce deficit on extension)	1,000
Charing Cross Hospital (towards provision of new casualty department, and other improvements)	1,000
Connaught Hospital (towards extension)	500
Deptford and Greenwich Babies' Hospital (towards rebuilding and extension on new site)	250
Dreadnought Hospital (Seamen's), Greenwich (towards first stage of extension)	1,000
East End Maternity Hospital (to reduce deficit on acquisition of adjoining building and its adaptation for nurses' quarters)	1,250
East Ham Hospital (to reduce deficit on equipment of new general hospital)	2,500
Elizabeth Garrett Anderson Hospital (to reduce deficit on reconditioning of existing hospital in connexion with recent extension)	750
Finchley Memorial Hospital (towards provision of new nurses' dining-room)	300
General Lying-in Hospital (towards provision of new nurses' home)	2,500
Grosvenor Hospital for Women (towards provision of accommodation for resident medical officer and for nurses)	100
Guy's Hospital (towards provision of site for out-patient extension and to reduce deficit on recent improvements)	3,000
Hampstead General and North-West London Hospital (to reduce deficit on provision of new operating theatre and emergency beds)	300
Harrow Hospital (towards extension)	300
Hornsey Central Hospital (towards new nurses' home)	600
Hospital for Consumption, Brompton (to reduce deficit on recent improvements)	800
Hospital for Epilepsy and Paralysis (towards extension)	350
Hospital for Sick Children (towards provision of wards for recovery cases at country branch)	700
Hospital of St. John and St. Elizabeth (towards enlargement of nurses' home)	800
Infants Hospital (towards extension)	750
Kensington, Fulham, and Chelsea General Hospital (towards extension)	1,250
King Edward Memorial Hospital (Ealing) (to reduce deficit on extension)	800
King George Hospital (to the building fund for the first stage of the new hospital)	10,000
King's College Hospital (towards improvements)	150
London Homœopathic Hospital (towards nurses' home extension)	600
London Jewish Hospital (to reduce deficit on acquisition of adjoining site)	100
London Lock Hospital (towards extension of out-patient department at Dean-street)	750
London Temperance Hospital (towards provision of new special departments and pay beds)	1,000
Marie Curie Hospital (towards provision of permanent out-patient accommodation)	100
Metropolitan Hospital (to reduce deficit on new nurses' home)	3,500
Middlesex Hospital (towards reconstruction)	14,000
Mildmay Memorial Hospital (towards extension of maternity pay block)	100
Miller General Hospital for South-East London (to reduce deficit on extension)	12,000
National Hospital for Diseases of the Heart (to reduce deficit on extension of out-patient department)	500
National Hospital, Queen-square (towards extension)	750
Nelson Hospital for Wimbledon, Merton, and District (towards provision of maternity pay-bed and child welfare block)	1,250
Plaistow Maternity Hospital (towards extension)	500
Poplar Hospital for Accidents (towards extension of X ray department)	150
Prince of Wales's General Hospital (towards provision of new out-patient department)	1,500
Princess Louise Kensington Hospital for Children (towards next stage of new hospital)	800
Queen Charlotte's Maternity Hospital (towards rebuilding and enlargement on new site)	9,000
Queen Mary's Hospital for the East End (to extinguish deficits on out-patient department and on maternity isolation block)	2,000
Royal Free Hospital (towards centenary extension scheme)	5,500
Royal Hospital (Richmond) (towards provision of new operating theatre)	300
Royal London Ophthalmic Hospital (towards provision of additional nurses' accommodation and wards)	750
Royal National Orthopædic Hospital (to reduce deficit on extension of country branch at Stanmore)	4,500
Royal Northern Hospital (towards provision of pay beds)	1,500
Royal Westminster Ophthalmic Hospital (to reduce deficit on rebuilding and enlargement on new site)	1,000
St. Bartholomew's Hospital (towards new operating theatres)	2,000
St. Luke's Hospital for Advanced Cases (to reduce deficit on new hospital)	100
St. Mark's Hospital (to reduce deficit on extension)	100
St. Mary's Hospital for Women and Children (Plaistow) (to reduce deficit on first stage of new out-patient department)	3,500
St. Peter's Hospital for Stone (towards extension)	400
St. Thomas's Babies' Hostel (towards provision of new out-patient department)	100
Seamen's Hospital Society (*see* Dreadnought Hospital)	
South-Eastern Hospital for Children (Sydenham) (towards provision of new casualty department and pay beds)	600
South London Hospital for Women (to reduce deficit on new out-patient department and nurses' quarters)	1,500
University College Hospital (towards extension of nurses' home)	750
Western Ophthalmic Hospital (towards rebuilding)	500
Westminster Hospital (towards provision of annexe for radium patients)	1,000
Willesden General Hospital (to reduce deficit on completed stages of extension)	750
Wimbledon Hospital (to reduce deficit on provision of children's wing)	500
Woolwich and District War Memorial Hospital (to reduce deficit on first stage of new hospital)	5,000
Total	£115,000

Voluntary Hospitals and the Local Government Act.

In the absence of the Vice-Chairman of the Voluntary Hospitals (Local Government Bill) Committee (the Rt. Hon. Hugh P. Macmillan, K.C.), Sir Edward Penton presented a report describing a draft scheme for a body representative of the Voluntary Hospitals of London to confer with the London County Council, under Section 13 of the Local Government Act.

The Voluntary System and the L.C.C.

The Chairman of the London County Council (Lord Monk Bretton) said that he thought the London County Council would welcome most cordially the coöperation of the Voluntary Hospitals of London in the extremely difficult and onerous duty of making adequate provision for the sick of London, and he was glad to be able to say that the draft scheme of representation referred to had been approved by the Central Public Health Committee of the Council, subject to one or two minor observations. It would, of course, in its final form be subject to the approval of the Council itself. It was the well-known policy of the Council for the last 20 years to do everything in its power to promote the welfare of the Voluntary Hospitals of London, and to seek their active coöperation in carrying out the various duties of the Council in connexion with the treatment of the sick. He believed that the County Council desired that the harmonious coöperation and happy relationship which

had always existed between it and the Voluntary Hospitals should not only continue, but, if possible, should be still further extended, in the near future.

Sir William Collins trusted that the future of the voluntary system would be safeguarded, whatever might be the progress of municipalisation.

Hospitals and Motor Accidents.

Lord Ebbisham referred to the very important Bill before the House of Lords that day on which a proposal had been made which would be very helpful to the Voluntary Hospitals.

Lord Luke said that his amendment to the Motor Traffic Bill would provide that in the event of any patient being carried to a hospital, the hospital should receive recompense for curing that patient. At the present moment, in regard to more than nine-tenths of those who were taken to hospital, the hospital had to pay. If the amendment were added to the Bill, then in future the compulsory insurance would include up to £4 a week for the hospital for the out-of-pocket expenses, up to a maximum of £25. It would only cost the owner of a motor a premium of 5*s*. a year, and he should think the motorist would feel more comfortable if he held such a policy.

Arrangements for 1930.

The Prince of Wales said that Viscount Ullswater, whose wise advice the Fund would miss, had been compelled to discontinue his service on the Council owing to the pressure of his numerous duties. The Rev. Owen Spencer Watkins was being invited to serve in the place of the Rev. W. T. A. Barber, who had left London and was unable to continue his membership. There would be a change in the title of the Voluntary Hospitals (Local Government Bill) Committee which would now be called the Voluntary Hospitals (Parliamentary) Committee, thus enabling it to consider any other Bills that might affect hospitals. His Royal Highness also mentioned that during his forthcoming absence in South Africa he proposed to delegate his powers, as President, to a Committee consisting of the Lord Chancellor, the Speaker of the House of Commons, and the Governor of the Bank of England.

On the motion of Lord Donoughmore resolutions delegating powers to committees were passed, and the usual votes of thanks terminated the proceedings.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

School Health Administration.

THE Department of Health for Scotland and the Scottish Education Department have issued a joint memorandum on school health administration as affected by the new Local Government Act. This document, which is an excellent summary of the whole system of school health administration, is too condensed to be summarised further ; but medical officers and school medical officers, as well as members of the new education committees, ought to make themselves familiar with every word of it. The new committees will be responsible for over 800,000 children—that is, roughly one-sixth of the whole population of Scotland —and the supervision of this large group continues during nine or ten of the most critical years of life. The school-child spends some 2000 days in the school environment, and the school health service has a long and unique opportunity for influencing the health and habits of the rising generation.

Proposed Clinic for Rheumatic Children in Edinburgh.

The public health committee of Edinburgh town council have agreed to recommend the establishment of a clinic for rheumatic children. Dr. William Robertson, the medical officer of health, suggests that a system of voluntary notification of rheumatism should be started, the notifying practitioner being invited to say whether hospital or other special treatment is required. The notification will give a rough indication of the incidence of early rheumatism—under which heading Dr. Robertson includes rheumatism, growing pains, chorea, St. Vitus's dance and pains in the joints accompanied by fever—and medical men will be invited to send patients for critical examination at the hands of an expert.

Dr. A. S. M. Macgregor, in his current bulletin on the health of Glasgow, says that November proved a favourable month. The general death-rate was 12·2, against 12·8 for November, 1928, and in one of the weeks it fell to 10·5, the lowest figure yet recorded for the month. Measles and pneumonia, though prevalent, showed a relatively low mortality, but a testing time for these diseases will come in January and February.

At the recent conference of the Scottish National Poultry Council, Mr. J. M. Caie, of the Department of Agriculture, sketched what has been done in arranging egg-laying tests during the last five years in Scotland. It has been found, he said, that the average number of eggs per bird of all breeds, and for the whole five years, ranged from 182 to 193. In 1908 there were just over 4,000,000 fowls in Scotland, and the average production of eggs per hen in that year was estimated at 72. In 1913 the number of eggs per hen in Scotland was given as 84, and in 1925, when the last census of production was taken, the estimate had risen to just over 100 eggs per hen per annum. These figures are not, of course, absolutely accurate ; but they probably represent pretty fairly an actual increase in production.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Treatment of Drug Addicts in New York City.

WHEN Commissioner Richard C. Patterson, Jr., took charge of the New York City Department of Corrections in 1928, he found no uniform plan in operation for handling the 1500 drug addicts that come under the supervision of the department. A committee under the chairmanship at first of Dr. William R. Williams, and later of Dr. Alexander Lambert was appointed, and has issued its report.[1] Two major problems are dealt with in this report : (1) The problem of withdrawal of the drug in the shortest possible time ; and (2) the ultimate rehabilitation of the addict. In a special ward at Bellevue Hospital, a number of different methods of withdrawal were studied. In order to have a standard on which to base results, it was agreed to use 100 patients in each method, and the symptoms selected as giving the best index of the condition of these patients on withdrawal were (1) gastro-intestinal symptoms ; (2) muscular symptoms ; (3) restlessness, both physical and mental, and (4) prostration, subjective and objective. Each of these symptom groups was recorded as absent, moderate, marked or excessive. Narcosan was first studied, and it was found to be no specific for drug addiction, nor to diminish the craving for narcotics after withdrawal. Withdrawal symptoms were influenced unfavourably, the gastro-intestinal symptoms being more severe than in abrupt withdrawal without any drug. Among other drugs tested were atropine, scopolamine, a number of depressants of the central nervous system (chloral hydrate, phenobarbital, paraldehyde, bromides), magnesium sulphate and iso-amylethyl barbiturate. The results in every case were unsatisfactory. The research was then turned to gradual withdrawal without substitute drugs. They find that "the reduction treatment, especially if carried out over a period of 14 days or more, is the most humane, in that it involves the least suffering. It is also the safest,

[1] Jour. Amer. Med. Assoc., 1929, xciii., 1297.

as regards danger to life, and can be used in any case of drug addiction." They recommend that all addicts undergoing treatment be under capable medical supervision, that those whose general condition warrants it, be subjected to abrupt withdrawal, and that those not included in this class be given the reduction treatment.

It is recognised that after their release addicts will suffer again from the craving for the drug. The committee feels that much may be learned from past and present attempts at rehabilitation in New York, but that a new plan must evidently be developed to meet local conditions. Certain basic principles are laid down. The addict must learn a trade or line of work by which he may be self-supporting. A position must be found for him when he is ready for it. His progress for a number of years must be supervised, and he must be brought to a state of mind whereby he becomes coöperative and honestly desires to be permanently free of his habit. They dwell also on the importance of making careful choice in the personnel and location of the centre, and in its equipment. Some arrangement must also be made whereby the addicts will not be free agents until finally discharged.

Consumption of Water.

The average daily consumption of water in 58 cities of Great Britain is said to vary from 17 to 84 U.S.A. gallons per capita. In most American cities the consumption exceeds 100 gallons per capita, though in some cities, such as San Francisco, where the water supply is metered, the consumption does not greatly exceed 70 gallons. Why do we use so much more water than Europeans? This question is discussed in a recent paper by Mr. Abel Wolman, the editor of the *Journal of the American Water Works Association*. He believes that only a part of our excess consumption is to be attributed to waste, and to the greater availability of sources. Much, he thinks, must be due to the greater demand in this country for sanitary conveniences. The sale of bath tubs here increased, it appears, from 415,496 in 1919, to 1,101,000 in 1927, in which period the population increased by only 15 per cent. Whether or not the use of so many bath tubs should be considered wasteful Mr. Wolman admits may be a matter of opinion. In Beverley Hills, California, the per capita consumption is over 400 gallons, although the water is metered. The residents are wealthy, and indulge in private swimming pools, as well as numerous bath-rooms in their luxurious homes. Does this spell "waste" or "a higher standard of living"?

Drug Stores and Venereal Disease.

The corner drug store, so-called because almost every street corner can boast of at least one of them, is a shop where you may buy ice-cream, "soft" drinks, newspapers, tobacco and many other things besides drugs. But like his English equivalent, the chemist, an American drug-store clerk is not unwilling to offer also medical advice for which he makes no charge, and the people seem ready enough to accept his recommendations. Thus an investigator for the American Social Hygiene Association who asked 100 young men, selected at random in public places, where he might get advice for venereal disease, was advised by no less than 42 to get it at a drug-store. Twenty-four directed him to a physician, 16 to a clinic, four offered home remedies, and 14 withheld advice. A questionaire was sent to all druggists in this same city, asking how many applicants they had for venereal disease advice. Replies were received from 237, who between them acknowledged 2355 applications from alleged venereal disease patients for advice, remedy without a physician's prescription, or treatment. One-third of the druggists admitted giving treatment to such patients without prescriptions. Forty-four per cent. had suggested that the patient go to a clinic or to a physician, while 23 per cent. did not state what their advice had been.

Blood Calcium.

The importance of maintaining blood calcium at the normal level is brought out in two recent reports. Drs. E. V. McCollum and Henry Klein, of the Johns Hopkins School of Hygiene, have conducted a series of experiments on pigs with diets of varying calcium content. These animals were selected on account of their omnivorous habits, because of the comparatively long suckling period, and because they have two sets of teeth. Three types of diet were offered to three groups of pigs, one of normal calcium content and one each of subnormal and high calcium content. Although the diet deficient in calcium was softer than the other diets, the teeth of pigs eating this diet were rapidly worn down to the gum margin. The teeth grew more slowly, and were less calcified (as shown by X rays) than those of the controls. Malpositions were about three times as common. Malocclusion was found to be characteristic of pigs that had an inadequate calcium allowance during the first year and adequate calcium thereafter. The experiments were carried out under a grant from the Research Committee of the American Dental Association. At the same time, Dr. Walter Timme, of the Neurological Institute, announces that parathyroid deficiency, leading to abnormally low blood calcium, has very definite influence on behaviour. Patients with hypoparathyroidism are prone to sudden anger on very slight provocation, and are unadaptable and uncompromising. They constitute problem cases in the home, at school and in every environment where they may be found. Their behaviour eccentricities may indeed become so extreme as to lead to certification.

Medical Service by Easy Payments.

A private corporation has offered one solution for the problem of the high cost of medical care. It has been chartered in California with the avowed object of applying the instalment system to the purchase of medical and dental service. If a patient needs operative treatment, the company will take care of the charges under contract for repayment over a specified period of time.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

The Yellow Peril.

AMONGST many tribulations India has much to be thankful for in the immunity she has so far enjoyed from certain tropical diseases which might have been expected to find easy entry. Jigger, for example, never seems to have obtained a real hold, though sufferers from the disease must continually be arriving from East Africa. The outstanding instance is, of course, the importation of yellow fever, a danger which has been much increased by the development of air travel. In a recent number of the *Indian Medical Gazette* the Surgeon-General of Madras commenting on the situation made good two points. One is that the Indian stegomyia, *Aëdes egypti*, is capable of conveying the infection; the other that a person who has been infected in West Africa may cross the Indian frontier by air before the infective stage of the disease has been reached. It would be quite possible for an attack of yellow fever to escape recognition by being mistaken for influenza or febricula, and if such an unrecognised case were introduced to a place where suitable mosquito vectors exist no ordinary precautions could prevent the rapid extension of the disease. Dengue, says the Surgeon-General, is known to spread like wildfire when infection occurs amongst a susceptible population, and as yellow fever is carried in exactly the same manner it is reasonable to believe that an outbreak would speedily grow beyond control. Under these circumstances, he argues, we have to choose between the comparatively slight inconvenience

which would be caused by interference with air traffic between West Africa and the eastern countries and the appalling results which might follow the spread of yellow fever to India and the Far East. It is satisfactory to know that the Public Health Commissioner, the Government of India, and the Secretary of State are alive to the danger, and that international regulations are likely to be framed to meet it.

Jail Reports.

One Indian jail report is very like another, and that which furnishes a text for these remarks is no exception to the rule. There is much in it to justify a feeling of pride in the department. It is common knowledge that the general arrangements in the jails are excellent, the housing is up to date and adequate, the food sound and plentiful, and even if there is technically some overcrowding, the normal scale is so ample that it is not likely to have an injurious effect. The general health of the inmates is good; the mortality of 8·6 per 1000 is far below that of the population outside the walls. A great majority of the discharged prisoners show an increase in weight, and no doubt many of them carry away something more on the credit side, having been taught a trade. What, then, it may be asked could be further desired? The answer is to be found in a chapter headed "Educative, Moral and Religious Influences in Prisons" of Sir Evelyn Ruggles Brise's "The English Prison System" (1921). In British prisons books of a moral and instructional character are issued freely to all who can make use of them, lectures are given, and discussions take place on subjects chosen by the prisoners themselves. A summary of current news is read out weekly. Daily religious services are made attractive by the aid of music. Music is also offered in the form of entertainments by choral societies, and in a large American prison musical training has long been given to convicts, with the result that many of the men were able to earn a livelihood after discharge, and the percentage of relapse to crime was definitely lowered. Surely the time has arrived when every Indian provincial prison return should have a heading for educative, moral, and religious influences, and show some substantial progress under it every year. Assistance to discharged prisoners is another direction to which philanthropic effort might be usefully directed.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg.-Lt. R. M. Buchanan to be Surg.-Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. J. W. C. Stubbs is secd. for serv. under the Colonial Office.

Capt. B. C. W. Pasco relinquishes his temp. commn. and retains the rank of Capt.

ARMY DENTAL CORPS.

Lt. A. F. D. Shapland, temp. Dental Surg., Gen. List, to be Lt. (on prob.).

TERRITORIAL ARMY.

Maj. H. E. McCready to be Lt.-Col. and to comd. the 143rd (S. Midland) Fd. Amb., vice Lt.-Col. (Bt. Col.) H. F. Humphreys, vacated.

Lt. F. W. Crook (late 5th Bn. K.R.R.C., Spec. Res.) to be Lt.

ROYAL AIR FORCE.

W. J. Cotter is granted a temporary commission as a Flying Officer.

Flying Officer B. A. Porritt is transferred to the Reserve, Class Di.

BRITISH HOSPITAL FOR MOTHERS AND BABIES.—Princess Mary recently opened a new administrative block and clinic department of this Woolwich Hospital, which has been built at a cost of £40,000.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1928 statistics of seven English administrative counties, the island of Guernsey, and of the "landward" or extraburghal areas of two Scottish counties:—

Name of district and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Durham .. (949,300)*	21·1	11·5	1·04	1·01	2·2	1·4	80	37	5·5
Staffordshire.. (712,080)*	19·2	10·5	0·73	1·19	1·6	1·3	62	—	3·6
Cheshire .. (663,280)	14·9	11·4	0·75	1·41	1·6	2·0	58	28	5·2
Hampshire .. (427,100)	17·1	10·7	0·71	1·48	1·2	2·0	46	16	2·9
Cumberland .. (210,600)	17·9	12·3	0·84	1·48	1·8	1·9	63	27	5·3
Huntingdonshire (56,320)	16·9	12·6	0·82	1·97	1·3	2·0	45	16	5·2
Rutland .. (17,960)	14·5	11·3	0·50	1·44	0·9	2·5	46	19	7·6
Guernsey .. (39,000)	20·8	12·4†	0·82	1·61	1·2	1·6	59	23	1·2
Fife .. .. (110,372)	19·2	11·3	0·62	1·02	1·5	1·4	82	38	6·1
Dumfries .. (45,800)	18·8	13·7†	1·03	1·29	2·0	2·3	73	24	3·5

* Adjusted for alteration of boundaries during the year.

† Standardised—Guernsey 9·9, Dumfries 12·0.

Relation of stillbirths to live births: Durham, 2·8 per cent.; Huntingdonshire, 3·0 per cent.; Rutland, 2·7 per cent. Guernsey, 3·6 per cent.

Durham County.

Dr. T. Eustace Hill says that the infant mortality-rate is the lowest ever recorded in the county. As an unsatisfactory feature of 1928, he notes the very marked reduction in the number of new dwellings available for a population over 30 per cent. of which is overcrowded. The much needed substitution of water-closets for privies has not made satisfactory progress, possibly owing to the prevalent trade depression. The prevalence of small-pox was less, 1124 notifications with 3 deaths, as compared with 5111 cases and 19 deaths in 1927. The notifications of encephalitis lethargica numbered 21, and the deaths 33. There were 189 notifications of puerperal fever and pyrexia with 9 deaths, whilst the deaths from other accidents and diseases of pregnancy and parturition numbered 103. This low proportion of maternal deaths due to sepsis was somewhat increased by the investigation of 88 maternal deaths. The principal causes of these investigated deaths were:—puerperal sepsis, 13; eclampsia, 16; embolism, 9; toxæmia, 7; postpartum hæmorrhage, 5; and antipartum hæmorrhage, 10. The notified cases of ophthalmia neonatorum numbered 140, and all cases of inflammation of the eyes of newborn children were followed up by the health visitors. The damage done to survivors from ophthalmia was one case of total blindness and another of impaired sight in one eye. Of the 563 stillbirths, 535 were legitimate and 28 illegitimate; 149 occurred in a first pregnancy; 1 in a twenty-third; 1 in a twentieth; 3 in a sixteenth; 1 in a fifteenth; and 3 in a fourteenth. The total pregnancies of these 563 mothers was 2453, of which 735 resulted in stillbirths. Among the stillbirths there were 36 sets of twins, including one of joined twins.

During the year a progressively increasing number of cases of skin tubercle (chiefly lupus, some scrofuloderma, and a few cases of tuberculosis cutis verrucosa) were sent to the skin department of the Newcastle Infirmary for ultra-violet therapy. Sir Robert Bolam says the most striking feature of the treatment is the disappearance of unsightly lesions attendant upon secondary pus infection, enabling the patient to go about with less physical and mental discomfort, but he finds that exposure to ultra-violet rays is not by itself sufficient to eradicate tuberculous lesions of the skin, but needs to be combined with other methods. Cases are also sent to Newcastle for radiographic examination by Dr. H. E. Gamlen, and considerable use was made of radiography in the oblique position of the thorax as an aid to the diagnosis of enlarged tuberculous glands in the mediastinum. The high death-rate from tuberculosis in Jarrow is the subject of a special investigation, the death-rate in 1928 from lung tuberculosis being 1·29 and from all forms 1·65. Young adults suffer in particular, and in many the disease tends to produce scattered foci with rapid caseation, and to terminate fatally after a short illness in spite of sanatorium or other treatment. This type of lung tubercle is met elsewhere on Tyneside and in other parts of the county, and resembles the acute type met with in races which have developed no immunity.

There is still much room for improvement in the effluents from collieries and by-product works. The department of scientific and industrial research held a conference of interested authorities and industries in October with regard to a proposed thorough biological survey of the river Tees, which was to be the first of its kind. The local representatives objected to being saddled with the cost of an investigation which was admitted to be one of national importance.

Staffordshire.

Dr. W. D. Carruthers includes in his report many details as to improvements and deficiencies in the water-supplies, sewage disposal works, and housing conditions of the 29 urban and 18 rural districts which make up the administrative county. The new houses built in 1928 were 2488, compared with 4219 in 1927. The local authorities built 1356, as compared with 2613 in 1927. However, at the end of the year there were 1480 houses in course of erection, compared with 210 in 1927. Much overcrowding still exists, and until it is possible to construct houses at lower rentals overcrowding, unhealthy areas, and slum dwellings cannot be dealt with in any drastic fashion. The systematic examination of milk samples for tubercle began in March, and during the first year 83, or about 6 per cent. of 1346 samples were found to be tuberculous. Eighty-two outside complaints of tuberculous milk produced in the county were received, and as a result 48 animals were slaughtered under the Tuberculosis Order. In addition, two cows had died and seven been disposed of by the owners for slaughter. Staffordshire made 13 complaints of tuberculous milk sent in to the county from outside, but the investigation by the outside authorities had a negative result in nine instances. The county began the year with one farm licensed for Certified milk, and three licensed for Grade A (T.T.), and ended the year with six licences for Grade A (T.T.), the Certified milk licence having been relinquished. Samples of all graded milks, including Grade A, were examined every month. Of 597 such samples, 525 were satisfactory, 72 not satisfactory, and 4 contained tubercle bacilli. It is not mentioned whether the tubercle bacilli were confined to Grade A milk or indicated a failure to maintain a tuberculin-tested herd tubercle free.

Both the death-rate from all causes and the infant mortality-rate were the lowest ever recorded in the county. There were 150 notifications of small-pox and one case in an old man proved fatal. There was an increase in diphtheria, chiefly in urban districts; the cases numbered 973 and the deaths 60. In some of the most affected southern districts immunisation work was arranged for in 1929. Of 23 cases of encephalitis lethargica, 21 ended fatally. There were 138 notifications of dysentery in the rural districts, 136 being at two mental hospitals. In one of the mental hospitals, which suffered simultaneously from an outbreak of typhoid fever (17 cases), there were 101 cases of dysentery, and the specimens examined showed that the causal organism was the Flexner bacillus. The new cases of venereal disease treated at the clinics were about the same as in the previous year, but the attendances were considerably better, and the defaulting was less. The confinements attended by midwives numbered 10,523, being 76·5 per cent. of the total births. The midwives notified 208 stillbirths (i.e., 2 per cent.) in their practices, and sent for medical help in 26 per cent. of their cases.

Cheshire.

Dr. Meredith Young reports among the features of the county tuberculosis scheme:—a slight increase in the number of notifications and deaths; a large increase in the attendances at orthopædic clinics, owing to the fact that the after-care scheme is now functioning throughout the country; the attendances at hospitals for special treatment were doubled, largely owing to the increase in artificial sunlight treatment; and a specially gratifying feature was the larger number of consultations between practitioners and tuberculosis officers. The bona fide midwives, who numbered 226 when the county took over inspection, are now only 37, and with the passing of the old-fashioned midwife many old superstitions associated with childbirth also pass, says Dr. Young. There are still nine midwives who cannot take the temperature or pulse. The new midwives do not receive adequate remuneration. The county council subsidise five midwives in districts where they cannot make a living. Four receive £60 and one £80 in addition to the fees they earn. A grant is made to two midwives annually towards attendance at a month's refresher course at Plaistow Maternity Hospital. In the 36 registered maternity homes there were 363 births, 18 of which were stillbirths. Of these births, 118 occurred in Bromborough Pool Home. There are still a number of unnotified births, knowledge of which is only obtained through the registrars. Investigation showed that at the end of the sixth month 65 per cent. of the mothers in rural districts were breast-feeding and 61 per cent. of those in urban districts. The illegitimate births numbered 368, of whom 39 died—an infant mortality-rate of 106. An inquiry into the circumstances of 114 illegitimate infants showed that the conditions were quite satisfactory in 103, fairly satisfactory in 9, and unsatisfactory in 2 cases. Towards the end of 1928 the first antenatal clinics were arranged for, under the care of obstetrical specialists, at Congleton, Runcorn, and Sale respectively, to begin work in 1929. Expectant mothers from the surrounding district have also been enabled to attend the antenatal clinic at Ashton-under-Lyne Infirmary.

Increased interest, Dr. Young states, is being manifested by the dairy industry in the purity of milk. The experience of Manchester and Salford, however, is that a larger percentage of tuberculous milks come from Cheshire than from other counties. Dr. Young mentions that as the result of outside complaints of tuberculous milk 152 tuberculous cows were slaughtered. There is a good deal of slackness shown by local authorities, both as to the removal of refuse and the management of tips. There is much variation in water-supplies—thus in Nantwich R.D. there are no fewer than 18 townships with no public water-supply, whereas Northwich R.D. is carrying out its water-supply duties "in a highly laudable fashion." The appointment of a new sanitary officer has led to an improvement in sewage disposal and the prevention of rivers pollution. Dr. Young hopes that all the authorities concerned will support the county council's scheme for a joint committee to deal with the pollution of the river Dee.

Hampshire.

Dr. W. J. Hart, acting county medical officer, describes the arrangements for maternity beds. An antenatal clinic is held bi-monthly at the Royal Hants Hospital, by means of which abnormal cases are booked for the hospital and normal cases for the maternity home managed by the Winchester Maternity Society, and subsidised by the county council. During 1928, 130 cases were admitted to the hospital and 157 to the home. In addition, 31 county cases were admitted to ten other hospitals and homes. The net cost to the county council for these 318 patients was £7 per case. The M. & C. W. centres now number 100, and are managed by a body of 550 voluntary workers. The county council's contribution to the expenses of these centres is £600 a year. Arrangements have been made for the establishment of 14 antenatal clinics. The clinic at Basingstoke will be under the charge of a practitioner with considerable obstetric experience, but the obstetric qualifications of the medical officers of the other 13 clinics are not mentioned. For the purpose of the puerperal fever, &c., regulations, 12 consultants have been appointed, and during the year this facility was utilised in 13 instances. Midwives attended 76 per cent. of the 7818 births, and more than half of their patients paid the insurance fee of 5*s.* per case to cover the expense of medical aid. For the 2987 insured women a doctor was called in in 48 per cent. and the net cost to the county council was £1109; for the 2724 uninsured women a doctor was summoned in 29 per cent. and the net cost to the council was £585.

The Hants County Council decided not to delegate their powers under the Nursing Homes Registration Act, and in response to applications registered 25 premises. There are still isolated districts without midwives, and the county council undertakes the refund of the expenditure up to £600 a year of the County Nursing Association in providing for these districts. The Nursing Association during last year only spent £118 in this extension of service. In Hampshire it is not found advantageous for district nurses to act as school nurses, tuberculosis nurses, or health visitors. Owing to the unreasonable delay in the notification of tuberculosis an arrangement was made in June for the registrars to report deaths from tuberculosis as they occurred. During the rest of the year the registrars reported 136 deaths, and of these 50 had not been notified! The 71 county council shelters are well used and appreciated. The sanatorium at Chandler's Ford has been fully occupied by 26 women and 20 children, and the sanatorium at The Mount, Bishopstoke, with 72 beds, gradually filled with suitable cases, and has been fully occupied since January, 1929.

Cumberland.

Dr. F. H. Morison reports that he has been instructed to draw up a complete antenatal scheme, and as a preliminary he gives statistical information to show that maternal mortality is higher in Cumberland than most counties, and has progressively increased both in the urban and rural districts during the last three quinquennia. Since the Housing (Rural Workers) Act, 1926, came into force, applications have been received for 94 dwellings, and sanctioned in 93. In the case of 14 the applications were withdrawn and, at the time of writing the report, £1403 had been paid in grants and £50 as a loan. Owing to the heavy incidence of diphtheria in the Brampton rural area immunisation was extensively carried out in 1926, and no cases of diphtheria were notified there in 1928. Notification of puerperal fever was not satisfactorily carried out. There were five notifications and six deaths, and five of the six fatal cases were unnotified. Dr. Morison also complains bitterly of the imperfect notification of tuberculosis. During the last three years 65 per cent., 61 per cent., and 65 per cent. of the deaths from tuberculosis were notified less than six months before deaths, or not notified at all. The accommodation for the two V.D. clinics at the Cumberland and Whitehaven hospitals is reported to be unsatisfactory in several respects.

Huntingdonshire.

Dr. C. B. Moss-Blundell reports that the towns have adequate supplies of good water, with the exception of Godmanchester, and that "the rest of the county derives its water from wells and ponds, all of which are 'shallow' and the water of which is grossly polluted." The water-supply of schools is similar to that of the area in which they are situated. No action has been taken to check pollution of rivers and streams, and very little action with regard to the adulteration of foods and drugs. There were ten cases of small-pox, all in the neighbourhood of Peterborough where this disease was prevalent. Isolation hospital accommodation is quite inadequate, and the whole situation requires revision. Of the 954 births registered 225 were notified by midwives, 3 by parents and handy women, 704 by doctors, and 22 by registrars only. There were 28 stillbirths, equivalent to 3·0 per cent. of the live births. The county health visitors and the district nurses visit expectant mothers but there are no antenatal clinics.

Rutland.

Dr. Christopher Rolleston reports that the village of Ketton, "the pride of Rutland," is to be invaded by large cement works, which, however, will employ 100 men and are not likely to pollute the atmosphere. Electrification and possibly industrialisation of the whole county is foreshadowed. Owing to the smallness of the figures the statistics fluctuate much from year to year. Rutland had the lowest stillbirth-rate among the counties, Lancashire and Cheshire the highest. Over a period of years Rutland has a low maternal mortality, but during 1928 two deaths from sepsis in the Oakham R.D. gave a maternal mortality of 7·6, the highest among the English counties. Dr. Rolleston urges the establishment of antenatal centres. Of 11 illegitimate children three died, an infant mortality-rate of 272·7. The county council subsidises a considerable number of approved nursing associations. The schemes for dealing with tuberculosis and mental deficiency compare very favourably with those of other counties. The 30 new houses included 16 erected by local authorities and 9 subsidised houses by other enterprise. Dr. Rolleston thinks that the benefits of the Housing (Rural Workers) Act, 1926, are not sufficiently known. Nevertheless, during last year, grants were agreed to for nine houses and refused for four, so that as much progress has been made in Rutland as elsewhere. Three veterinary surgeons have inspected the dairy herds, and one cow was condemned for tuberculosis. In addition, the inspection of a herd, as the result of an outside complaint, resulted in the biological examination of the milk of seven individual cows, four of which contained tubercle bacilli.

Guernsey.

This isolated community has points of special interest to the epidemiologist. Thus, the cows are free from tubercle, and there ought to be no human tubercle from that source. The three deaths from non-pulmonary tubercle in 1928 were from meningitis (aged 2–5), from peritonitis (aged 5–15), and from tuberculosis of the kidney (aged 25–65), respectively. The two chief industries are the culture of fruit and vegetables and granite quarrying. If the ingestion of tuberculous milk in childhood (as some believe) prevents tuberculosis of the human type, Guernsey should be badly off but, on the other hand, it has to be considered that granite quarrying and cutting has a phthisigenic effect, that the fruit and vegetables are chiefly grown under glass (hardly a healthy form of gardening!), that Guernsey has its housing question, 23 "terribly insanitary houses" being demolished in 1928, and that persons stricken with consumption may take up their residence in Guernsey owing to its reputation as a health resort, and that all these causes may help to keep up the death-rate from pulmonary

tuberculosis, rather than the lack of immunisation by tuberculous milk. Dr. H. Draper Bishop reports that the cases of diphtheria were of a severe type, with a case fatality of about 10 per cent., and that most of the 18 cases of scarlet fever were also of a severe character. For many years previously scarlet fever had been practically unknown, with the exception of 1926, when a small outbreak occurred as the result of a fatal but unrecognised case being landed from a ship. An elderly man and his wife were notified as suffering from encephalitis lethargica and both died. Guernsey has had a law for the prevention of smoke since 1858. Recently the smoke nuisance has been increasing. A successful prosecution was undertaken against one firm in 1928, and as a result all the firms are installing appliances to prevent smoke. Better methods for the collection and disposal of refuse are under consideration. Dr. Bishop suggests that a scheme should be devised to enable sufferers from cancer to be sent to England for radium treatment.

Fife.

Dr. G. Pratt Yule says the infant mortality-rates of the four county districts were: St. Andrews, 31; Dunfermline, 80; Cupar, 88; and Kirkcaldy, 93. Dunfermline and Kirkcaldy include coal-mining areas and were the most likely to be affected by the aftermath of the mining trade crisis of 1926. There was no death from typhoid fever in 1928 and only one in 1927, although this disease was formerly common in Fife. Dr. Yule attributes its decline to better water-supplies and improved conveniences. The tuberculosis scheme embraces 26 burghs and a population of over 200,000. The scheme is unusual in that there are no dispensaries, and the work is done by home visitation. During the year the notification of new cases has been satisfactory, and medical practitioners have coöperated cordially. Most of the new cases come from the smaller unhealthy dwellings. The accommodation at the V.D. centres at Kirkcaldy and Dundee has been improved, but the premises at the Dunfermline centre are "most unsuitable and inadequate." Centres have not hitherto been established for the M. & C.W. scheme. Dr. Yule points out that these will be necessary if progress is to be made in prenatal and postnatal work for mothers, and in the care of pre-school children. The 13 child-birth deaths gave a mortality of 6·1 per thousand births, and in the three previous quinquennia the annual deaths were 14, 18, and 13 respectively. Efficient antenatal supervision, maternity beds for cases from unsuitable homes, and the early removal to hospital of cases with puerperal morbidity are given by Dr. Yule as some of the remedies for this high death-rate. Housing efforts in the Dunfermline and Kirkcaldy districts have hitherto been chiefly concerned with the mining areas, but Dr. Yule points out that much might be done profitably under the Rural Workers Act of 1926 for the improvement of the stone-built rural cottages, which are structurally substantial, but in their present condition hopelessly insanitary. The dairy cattle undergo veterinary inspection twice a year, and 42 cows with tuberculosis of the udder were discovered. Certified milk is produced at two farms, and Grade A (T.T.) at one.

Dumfries County.

Dr. John Ritchie renews his plea for hospital beds for puerperal fever. Two dairy farms were licensed for Certified milk and 12 for Grade A (T.T.). One licence was revoked, owing to the farmer refusing to remove from his herd 10 cows which had reacted to the tuberculin test during the summer. A clean milk competition attracted 22 entrants. The competition lasted from Feb. 15th to May 16th, and three surprise visits were paid to each competitor. At the end of each round a competitor was notified of his marks and the standard, high to begin with, improved during the competition. The county veterinary inspectors, Messrs. F. A. Davidson and G. A. Sangster, submit a very interesting report on milk production in the county. The district committees adopted by-laws in 1926, and since then the veterinary surgeons have been laying the foundations for improved methods and premises. There are 881 dairy farms housing 14,624 cows. Attention is drawn to a prevalent type of mastitis associated with a diplococcus. This type of the disease is of a chronic and mild nature, and unlike ordinary streptococcal mastitis the acidity of the milk from the affected quarter is low. Infectious abortion is reported to be on the increase and "probably as big a scourge to the dairy farmer as tuberculosis." The veterinary inspectors further state that the supply of milk from tubercle-free herds has been in excess of the demand for some time. Their experience leads them to emphasise two important factors in the maintenance of tubercle-free herds. First, it is practically impossible to maintain such a herd unless it is isolated from untested stock, either by natural barriers or double fencing; secondly, the incubation period may last months, so that a newly purchased cow may pass the test, be added to the herd, and subsequently develop tuberculosis. They, however, affirm their strong belief in the reliability of the tuberculin test.

SCHOOL MEDICAL SERVICE.

—	No. on roll.	Aver. E.S. attend-ance.	Routine inspec-tions.	Special exams. and reinspec-tions.	Per-centage of defects.
Blackburn ..	16,433	14,489	4,526*	8,961	20·3
Smethwick..	11,683	11,538	4,521	9,087	23·2

E.S. = Elementary school.

* With 1114 of 11 to 12 year groups equals 5640.

Blackburn.

THE report of Dr. V. T. Thierens, in succession to Dr. Holden, has coördination and continuity as its keynotes. The school medical officer and assistant are also medical officer of health and assistant, while the tuberculosis officer and the woman assistant medical officer also help in the school work Record cards are transferred from the child welfare centre to the school medical service. For young children nursery classes have just been opened, whose main aim is to cultivate good habits in the widest sense. An important feature is the afternoon siesta, when for 45 minutes the babies sleep on bed rests which they fix up themselves. Milk and cocoa are supplied at a charge of a halfpenny a day, or in exceptional cases gratuitously. The medical inspection is carried through by frequent visits from the nurse, with whose help it is hoped to eliminate many of those minor defects which retard educational and physical progress in later life. Those who fear nervous or mental strain from sending babies to school should study a typical time-table which includes handkerchief inspection, nature chat, preparation for lunch, play and music, with sleep time in the afternoon. In Blackburn there are 1300 children under five attending school, and Dr. Thierens submits the need for extension and special class-rooms built on the open-air principle, with slipper-baths and gardening facilities.

During ordinary school life the children of Blackburn receive close medical attention, with an extra age-group for medical inspection at 11–12, and special supervision is exercised over the rheumatic children. The establishment of a rheumatic supervisory centre is suggested to link up the work of the school medical service, the after-care committee, and the certifying factory surgeon. For many of the defects left over on leaving school treatment is ensured by coöperation between the service and the juvenile employment committee. Mr. Duckworth, who serves the education committee as juvenile employment officer, gives 34 examples of untreated defects in about half of which his efforts secured attention. There is still the question of defects arising after school age, but the

decision to raise the leaving age to 15 will halve the gap before the care of the Insurance Acts is reached.

Smethwick.

Dr. Hugh Paul gives a thorough consideration to the influence of Vita glass. His experiments point to a definite increase in the hæmoglobin content of the blood of the children who worked in class-rooms so glazed, but their heights and weights showed no superiority, nor did educational tests detect any influence. In his opinion the experiments would not justify the education committee in reglazing all the old schools. Of the great value of sunshine in the open-air he is keenly aware; an open-air school on the Fors Estate site, to be ready for pupils by May, 1929, will compare favourably, he writes, with the best in the country. He puts in a plea for more open spaces for children to play in; the street playgrounds of the past are now unsafe and other spaces should be provided within easy reach of the home. One new recreation ground has been provided through the generosity of Messrs. Guest, Keen, and Nettlefold. Dr. Paul suggests that future housing schemes should set apart small areas for recreation purposes.

The education committee have no orthopædic scheme, nor any special school of their own, but Smethwick Cripples Union, a voluntary body, works in close harmony with the school medical service, which refers to it cases of crippling defect. The union employs an orthopædic surgeon, Mr. Wilson Stuart, and a full-time masseuse and orthopædic nurse, and their clinic is equipped with an ultra-violet installation. Children requiring in-patient treatment are sent to Northfield or Bromsgrove, where the most modern methods are available. Pulmonary tuberculosis is dealt with at the chest clinic, where 108 cases were under observation, though only one child was found definitely suffering from phthisis. The only note of regret in the report concerns the large amount of uncleanliness (9·9 per cent.) in the borough; in the year 1928 no child, Dr. Paul writes, ought to come to school dirty. The number of cleanliness examinations was increased from 32,000 in 1927 to 43,000 in 1928; it is, he remarks, primarily the duty of parents to keep their children clean, and in a town like Smethwick where they take more than an average interest in the medical inspections it is astonishing to find so many dirty children; 18 of the cases reported were in the secondary school. The trouble should yield to the influence of the nursery school which is hoped for, and which should also prevent the large percentage (26·4) of medical defects among school entrants.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 14TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 265; scarlet fever, 3157; diphtheria, 1749; enteric fever, 31; pneumonia, 985; puerperal fever, 57; puerperal pyrexia, 100; cerebro-spinal fever, 11; acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 13; dysentery, 8; ophthalmia neonatorum, 87. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Dec. 17th–18th was as follows: Small-pox, 379 under treatment, 8 under observation (last week 353 and 15 respectively); scarlet fever, 2715; diphtheria, 2689; enteric fever, 54; measles, 546; whooping-cough, 122; puerperal fever, 19 (plus 8 babies); encephalitis lethargica, 123; poliomyelitis, 3; "other diseases," 11. At St. Margaret's Hospital there were 13 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 27 (13) from measles, 8 (2) from scarlet fever, 19 (1) from whooping-cough, 57(16) from diphtheria, 54 (12) from diarrhœa and enteritis under two years, and 44(3) from influenza. The figures in parentheses are those for London itself.

The death from enteric fever outside London was reported from Chesterfield. Wigan reported 4 deaths from measles, Stoke-on-Trent 3. Three deaths from whooping-cough were reported each from Birmingham, Leeds, and Sheffield Diphtheria claimed 4 deaths in Hull; diarrhœa 6 deaths in Liverpool, and 3 each in Nottingham, Manchester, and Salford. Influenza claimed 5 deaths in Sheffield.

The number of stillbirths notified during the week was 227 (corresponding to a rate of 38 per 1000 births), including 32 in London.

Correspondence.

"Audi alteram partem."

THE APPROACHING CHANGES IN THE HOSPITAL SYSTEM IN THIS COUNTRY.

To the Editor of THE LANCET.

SIR,—The inadequacy of the provision for institutional treatment of the injured and sick of the working classes has been a sad spectacle in this country ever since the means at the disposal of doctors for better treatment became appreciable. It has been reported that there are 5000 potential patients on the waiting-list for admission into the Royal Infirmary, Edinburgh, an institution that meets, and is expected to meet, the needs of only a small section of the population. The disparity between the capacity of such hospitals and the needs of the people has rapidly increased, is still on the increase, and, indeed, is likely to increase further, and at a greater speed. Treatment of fractures, for example, was, even 30 years ago, in the main domiciliary, and that for pneumonia and typhoid was also the same; to-day each of these conditions needs the facilities of an adequately equipped institution to provide the advantages to which it is now realised every patient is entitled. In former days the charity hospitals, as I will term them here, did all they could to meet the needs of the poor, and the medical profession responded by giving their services on conditions acceptable and honourable to all concerned. The chief hospitals, maintained on a charity basis, have medical schools which are the pride of the country. The subsidiary ones have served the community and the doctors in a way that is reflected in each locality. Of late years it has been thought desirable to re-christen all these hospitals—those with and without medical schools—"voluntary" in replacement of the time-honoured "charity." The motive for that change in name is not apparent; but it in no way disguises the real nature of the hospitals, but only gives a pretence where none is necessary. Unfortunately, it has been impressed upon the public that these hospitals, whether with and without medical schools, are incomparably superior to others in this country and outside it. The directions in which they once occupied that proud position were especially: in being spaciously constructed and staffed competently by nurses. But the world has caught us up in these and many other directions and our hospitals have been outstripped.

Our machinery for providing institutional treatment for the workman under the Insurance Act is dependent upon charity, with a recent addition on the pseudo-provident system worthily supported by many working men and women. Owing to a stationary state in medicine there was until recent years no greater need for institutional treatment than could be met by the large charity hospitals, because the technical means for the care of accidents and of disease were not then as fully appreciated as they are at present.

But to-day, under totally new circumstances and conditions, the technical treatment of accidents and diseases demands a great increase in the facilities for institutional treatment. Charity and pseudo-provident schemes in these times are totally inadequate for such a purpose. The hospitals, with medical schools attached, need to be greatly increased in numbers rather than in size if medical education is to be promoted as it should be and has been until recent years in this country. Book-learning is excellent, but without technical training it is next to useless and often dangerous. As a direct consequence of the policy, or rather lack of a policy, of the General Medical Council in regard to the education and training of the doctor a young man is qualified by an examining body registered by the State to practise medicine in all its branches when he has often had insufficient clinical experience.

Not only is the young doctor inadequately trained for the professional work in front of him but there is, in this country, no separate hospital provision for the training of physicians, of surgeons, of obstetricians, and other specialists to prepare the best graduates for the higher work they should undertake. Indeed, these exceptional men are now neglected, and their neglect will assuredly react to the detriment of the science and art of medicine.

The system for the poor-law hospitals or infirmaries, still in being, was originally planned to provide institutions for the treatment of the working people throughout the country, and an adequate machinery was created for the purpose. But in consequence of the rapid development of industrial prosperity during the nineteenth century the charity hospital was considered more in keeping with the sentiments of the age. Quickly hospitals, supported by the charitable, made their appearance throughout the country in growing centres of population. Recently these hospitals have been in great part brought under the support of a pseudo-provident system which the working men have evolved to a remarkable degree of perfection. Charity has, therefore, been assisted by a pseudo rather than a true provident system, with the approval of the working men. The hospitals in existence to-day, then, are the charity hospitals with and without medical schools attached, and these are regarded as the proper institutions for the working-classes. Unfortunately they are not large nor numerous enough to meet the needs of those classes in the community. Besides there are the hospitals under the poor-law, which have of recent years been greatly extended, to serve the dense populations of the big cities and towns. The last far outnumber the first group and all together fall far below the needs of the community since the progress that has been made in medical science during the last 50 years.

Especially more hospitals with medical schools for the technical training of young doctors are urgently needed; also more for the institutional treatment of the working men and their families; and, at the moment, more urgent still is the need for hospitals in which future physicians, surgeons, obstetricians, and other specialists can be adequately trained. Although no coherent scheme has been put forward for meeting the hospital needs of the present nor of the future, the situation fortunately is in a plastic state. The great hospitals with medical schools attached are appealing to charity so that medical education may be properly upheld in this great and wealthy country, and on the score that such hospitals will be at the service of the community as well as that of medical education. These great hospitals should, in my opinion, not be at the service of the ordinary patient but only at the service of the extra-ordinary, certified as such by the members of the medical profession. They indeed are worthy of being placed on a pedestal which will ensure the most careful investigation of the diseased states of a person and where every remedy shall be tested as to its merits. They should be enhanced in their position rather than be kept under or reduced to the level of those in which the recognised means of diagnosis and treatment of the day are duly and properly carried out. Indeed, they should be super hospitals if they are to attain the highest aim in front of medicine. Super hospitals properly and adequately run the country sorely needs—ordinary hospitals it must have and in adequate numbers here, there, and everywhere. Charity hospitals might continue to exist alongside public hospitals for all who care to avail themselves of them, but not under the guise that they might be sufficient to meet the needs of the people. Such is the selection that confronts us, and where is the organisation to consider it? None exists. The Royal Colleges of Physicians and Surgeons are absorbed in examining; the General Medical Council appears to me to fail to grasp the real qualifications needed by a young doctor, and it is compelled to spend much of its time in protecting the public against the doctor who will not abide by the ordinary rules of practice, and it was unfortunate that when a few years ago a Ministry of Health was constituted its amalgamation with the Local Government Board produced a mongrel of but little value either to local government or to public health. A change is imperative, and it may be that now the Ministry of Health will, in turn, split itself and give birth to disparate twins, a new local government service and a public health department in control solely of the medical services.

What is needed above all things is, I believe, a board of medical men, acquainted with the various aspects of medicine, to organise a new hospital service for the country, to regularise the existing institutions, to arrange for the provision of sufficient hospitals for adequate technical training of young doctors; to train young doctors of exceptional ability and promise to acquire further knowledge and extensive practice in medicine, in surgery, in midwifery, and in all special branches so that there may be a proper succession of well-trained doctors to fill the many offices that become vacant in the hospital services throughout the country. As changes are impending, now is the time to draw attention to the actual state of affairs. I am, Sir, yours faithfully,

Cambridge, Dec. 18th, 1929. JOSEPH GRIFFITHS.

MUTILATING OPERATIONS.

To the Editor of THE LANCET.

SIR,—On p. 1338 of your last issue an excellent report is given of the admirable speech made in the House of Commons by the Duchess of Atholl on the subject of mutilating operations performed, ritually, upon women and girls in certain of our Colonies or Dependencies. I do not propose to comment further upon this speech, but I am impelled to say something, with your permission, concerning mutilating operations performed, in this country, upon boys and young women. For some years past I have noticed, as many must do, the very obvious evidence of the gross mutilation that is inflicted upon young male children under the plea of circumcision as a necessary operation. (I firmly believe that the circumcision of male infants is seldom, if ever, necessary, for the defect is not so much in preputial redundance as in penile insignificance, a fault that is usually remedied in a few weeks or months by natural growth.) Nor is there any reason why the so-called adhesions which so often form the excuse for the operation should not be broken down by a little manipulation, or the judicious use of a lubricated director. This is not, however, my point. I refer rather to the effects of the operation in producing a state, literally, of gross mutilation, by the time the unfortunate boy, or youth, has reached puberty.

To what extent the gross mutilation that is the frequent result of the careless performance of circumcision in early infancy interferes directly with due performance of sexual function I cannot say. But no physician, who being interested in the

psychological aspect of disease, yet cares to examine his patients physically, can help being impressed with the fact that, of those men consulting him on account of sexual neuroses, or neuroses and psychoses with a sexual basis, a very large proportion are found to be the subject of deformity—I can call it nothing less—due to circumcision. Those of us who accept the teachings of Adler are of course able to explain the neurosis as being determined, very largely, by the presence of an "organ-inferiority," and one forsooth the result of an unprovoked and unwarrantable trauma. Indeed, one is impelled to consider the effect, in provoking racial neurosis, of racial and *ritual* male circumcision!

So much for one kind of sexual mutilation, practised amongst Gentiles, ostensibly for medical reasons, but certainly in offensive ignorance of psychological teachings. It so happens that, within the last two years, I have come across evidence of what seems to be an increasing practice, certainly in America, and perhaps in England. It is this. Certain mothers (of a type familiar to us all), who allow their daughters little independence in thought or deed, will take these unfortunate girls, shortly before marriage, to doctors—usually women doctors—to see "if all is right." The daughters about to be married, thus brought to the doctors, are almost certain to display spasm on examination—every psychologist knows why—and, to judge by the facts brought to my notice, the doctor is as certain to say that "something should be done," and to proceed to do it. What is done is usually the snipping away of the hymen, sometimes vaginal dilatation, and, less frequently, incision or stretching under an anæsthetic is carried out. (I say nothing about the "operations" performed *after* an infructuous honeymoon, when nothing more than hysterical vaginismus is really present.) In more than one case the "snipping" and so forth has been clumsily performed, and sometimes the "stretching" involves an almost permanent laxity. But the psychological damage done far outweighs even the physical, and one has even wondered to what extent the unconscious determining factor in the mind of the "operator" has not been one very suitable for analysis! At any rate, I assert this, that in every case known to me in which this "pre-marital rite"—I quote the phrase used in the House of Commons—has been carried out, the result has been post-marital disaster.

If you will allow me, Sir, to consider the leading article of capital importance that appeared in your columns on Nov. 2nd (p. 934) concerning the position of psycho-analysis, as having reference to psychological methods *generally*, I will say that such facts as I have narrated reinforce, in the strongest way, your plea for an end to the conspiracy of silence that obtains, in respect of psychological science, amongst the teachers of academic medicine. It is time to say that no man has a right to call himself, or practise as, *physician* unless he has at least as much acquaintance with the theories and methods of Freud, Jung, and Adler, as he has with those of Koch, Lister, and Pasteur. I confess that it seems to me not much better to strip a baby boy's penis or to cut away a bride's hymen "under strict antiseptic precautions" in London, than to do the same sort of thing in Africa with a flint knife. The psychological motives and the psychological results are, if anything, more deplorable in the former case than in the latter.

I am, Sir, yours faithfully,

F. G. CROOKSHANK.

Wimpole-street, W., Dec. 20th, 1929.

NELSON'S FATAL WOUND.

To the Editor of THE LANCET.

SIR,—A very interesting statement describing Nelson's fatal wound "written and signed by Surgeon William Beatty," who attended Nelson on board the *Victory* at Trafalgar was published rather more than twenty years ago in THE LANCET (1906, i., 68) "through the courtesy of Mr. Dudley Brown, of Woodside, Surrey," who had "found the original document among some old papers." An explanatory note stated that:

". . . Surgeon William Beatty's 'Authentic narrative of the death of Lord Nelson, with the circumstances preceding the Happening and subsequent to that Event' was published with a 'Provisionary report of his Lordship's wound' and certain anecdotes immediately after the tragic occurrence, and the note that we now (1906) publish was probably penned for his own use as an immediate memorandum. It bears the shape of a letter but it is not addressed to anyone. . . ."

The origin of this "letter" can now be explained; for it is copied out in full in a commonplace book of Sir Astley Cooper's, which has recently been found, with a number of other MSS., at the Royal College of Surgeons. The copy is entered in the book under the heading "gun shot wound that killed Lord Nelson." But between this heading and the "statement" the following letter is copied:—

"His Majesty's Ship *Victory*. Dover Roads. 15 Decr. SIR,—Conceiving that a true statement of the nature of the Wound which deprived the British Nation of its unrivalled Hero, the late illustrious Lord Nelson, may be acceptable to you, I take the liberty of enclosing as correct a one as the nature of existing circumstances enabled me to ascertain: And embrace this opportunity of acknowledging myself much obliged for the Professional instruction received at different periods from Mr. Cline and you.

I am, Sir, with much respect,

Your obliged Servant,

W. BEATTY, surgeon."

The fact that this letter was copied without comment into Cooper's commonplace book implies convincingly that the original was addressed to Cooper, although there is no direct evidence of this. The reference in the letter to "instruction received from Mr. Cline and you" further strengthens this inference. For Cooper began to assist Cline, whose pupil he was, at St. Thomas's Hospital in 1789, and it was not till 1800 that he abjured Cline's democratic politics to gain the surgeoncy at Guy's. Beatty may well have studied under Cline and Cooper, for according to the Dictionary of National Biography he "entered the service of the Navy at an early age, and saw much service in it in various districts of the globe," while in 1806—that is, within a year of Trafalgar—"he was appointed physician to the Greenwich Hospital, an office which he retained till 1840."

The copy of Beatty's statement in the commonplace book follows word for word that published in 1906, with only a very few variations of spelling and punctuation. While the statement may of course have been in the first instance "penned for his own use an as immediate memorandum," it is now established that it was sent in a letter addressed, presumably, to Astley Cooper.

I am, Sir, yours faithfully,

W. R. LE FANU,

Assistant Librarian, Royal College of Surgeons of England.

Dec. 23rd, 1929.

ON his retirement from the medical officership of health for the County of Devon after 21 years' service, Dr. George Adkins has received many tokens of appreciation from his colleagues in the county health service. His successor is Dr. L. M. Davies, County M.O.H. for Northamptonshire.

JOHANNESBURG GENERAL HOSPITAL.—The new Mining Block is on the point of completion, and it is claimed that this will then be the largest hospital, under the control of a single head, in the British Empire. Under the new Hospital Ordinance the Provincial Administration will grant a subsidy of 30*s.* for every £1 of voluntary contributions. The estimated expenditure for this year is £208,000.

Obituary.

SIR WILLIAM MILLIGAN, M.D., LL.D. ABERD.

WE regret to announce the death of Sir William Milligan in Manchester on Dec. 19th at the age of 65. The career thus closed was conspicuously successful in many directions, for he leaves a lasting mark on his specialty and will be remembered as an aural surgeon of outstanding experience and ability and as a notable figure in the public life of his city.

William Milligan was the second of several distinguished sons of the late Very Rev. Prof. William Milligan, of Aberdeen University. He was educated at Old Aberdeen Gymnasium, a school once well known but now no longer in existence, and at Aberdeen University where he graduated M.B. with honours in 1886, and M.D. with highest honours in 1892. Having served as senior demonstrator of anatomy at Aberdeen, he went as house physician to the Northern Hospital, Liverpool, and then pursued post-graduate studies at Göttingen and Vienna before settling in Manchester as an aural surgeon. At first he was attached as honorary surgeon to the Manchester Ear Hospital, and later he was appointed aural surgeon to the Royal Infirmary, from whose active staff he retired about four years ago on reaching the age-limit. He was lecturer on diseases of ear and also, after some years, when the two appointments were combined, on diseases of the throat, at Manchester University. Other appointments which he held were those of consulting laryngologist to the Christie (Cancer) Hospital and surgeon-laryngologist to the Manchester Radium Institute. This last institution owed much to Milligan's keenness and business ability; he acted as honorary secretary to the committee which, in 1913–14, raised a very large sum of money for the provision of radium for Manchester and district, and he was honorary secretary and treasurer of the Institute as well as being a member of its surgical staff from its foundation.

SIR WILLIAM MILLIGAN.
[*Photo by Lafayette.*

Sir William Milligan was president of the Manchester Medical, Clinical, and Pathological Societies, in turn; he was a prominent figure in and president of the old British Otological, Laryngological, and Rhinological Association, and, when it amalgamated as part of the Royal Society of Medicine, he was in succession, at an interval of some years, president of the Otological Section, and of the Laryngological Section. He was also president of that eclectic body, the Visiting Association of Throat and Ear Surgeons of Great Britain, and an honorary member of the Austrian Otological Society. In 1911, with Dr. Wyatt Wingrave, he published his magnum opus, "A Handbook of Diseases of the Ear." The word "handbook" disguises the size of this volume, which is perhaps the most comprehensive work on the subject that has been published in the British Isles. The book was especially notable as emphasising the importance of coöperation between aural surgeon and clinical pathologist. A smaller work on the same lines, intended for students, and also written in collaboration with Dr. Wingrave, was published in 1922. Besides being a frequent contributor to medical journals he was formerly one of the editors of the *Journal of Laryngology, Rhinology, and Otology*, and in its leaner years that journal, now prosperous under a slightly different title, owed much to his interest and generosity.

Milligan's reputation as a consultant in otology and laryngology was founded on an enormous clinical experience wedded to native acumen and sound judgment. When he was at the zenith of his prowess the north of England was busier and more prosperous than it is to-day, and he had possibly a wider-ranging private practice than any aural surgeon in the country, being frequently called into consultation in London and abroad. It is difficult for a Londoner to realise the ascendency that Milligan held for many years in his specialty in the North and Midlands. To a man of his splendid physique hard work was the greatest pleasure, and often he would work for weeks at a time, from the early hours of one morning until the early hours of the next, operating at his nursing home and the hospital, seeing practitioners and patients, dictating letters and writing. He would see as many as 90 private patients in a day, in addition to other work, with an apple at midday as the only break. In debate he was emphatic in his opinions, which were well marked on subjects of controversy. He was an ambitious man, of handsome and somewhat imperious aspect, and he did not suffer fools gladly; but he was kindness itself to his house surgeons and other juniors with their way to make, and often he took infinite trouble to make their path smoother. When at his very busiest he would travel many miles out into the country, not once but several times to attend the sick child of a country doctor.

Under Milligan, Manchester saw the treatment of diseases of the ear, nose and throat develop from syringing, spraying, and painting into the surgical specialties of to-day. As an operator he was probably seen at his best when performing the radical mastoid operation, in which he introduced a number of important modifications, such as his self-retaining retractor, his meatal flap, and his wide drainage-tube; to the student of aural surgery it was a breathless and dazzling entertainment to see him perform a mastoid operation at high speed, with a running flow of comment and explanation—hardly seeming to look what he was doing, but in reality aware to a millimetre of every movement. In otology his name will always be associated with the subject of tuberculous disease of the middle ear, on which he was one of the earliest and most earnest investigators, and with the surgery of affections of the labyrinth, on which he wrote exhaustively from a large experience. But although it was as an aural surgeon that he was most universally known, he did not by any means neglect the other branches of oto-rhino-laryngology. He was one of the first in this country to take up œsophago-bronchoscopy, and early introduced modifications of Killian's tubes; his private collection of foreign bodies removed from the œsophagus and bronchi was enormous. Malignant disease of the nose and throat was another subject that attracted his special interest, and he was a pioneer and an enthusiast in the employment of radium in these conditions.

Milligan was not only a distinguished aural surgeon, as well known in London as in Manchester, and the author of a standard text-book on his specialty, but he was prominent in the public life of Manchester. He was knighted in 1914, and when the war broke out he was attached to the 2nd Western General Hospital (T.F.), where with Colonel Westmacott, he had charge of the many cases which passed through the institution. Later he was appointed consulting aural surgeon for the north-west area under the Ministry

of Pensions. For many years he had been keenly interested in politics, and after the war he twice stood as a Parliamentary candidate in the Liberal interest, but without success.

Sir William Milligan was fortunate in his home life, and his large family of brothers and sisters was a singularly united clan. He spent perhaps the happiest days of his life with a rod or a gun on his beautiful estate, Polmood, in Peeblesshire. Married, in 1890 to the daughter of Mr. James Anderson, of Liverpool, he leaves a son and a daughter.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE CHRISTMAS ADJOURNMENT.

THE House of Lords adjourned on Dec. 20th for the Christmas recess. They will reassemble on Jan. 21st. Among the Acts which received the Royal Assent before the adjournment was the Highlands and Islands (Medical Service) Additional Grant Act. The House of Commons adjourned on Christmas Eve.

THE MENTAL TREATMENT BILL CONSIDERED ON REPORT.

The Mental Treatment Bill was considered on Report in the House of Lords on Dec. 17th.

Power to Receive Voluntary Boarders.

On Clause 1 (which gives power to receive voluntary boarders) Earl RUSSELL moved an amendment, which was agreed to, reducing the age at which persons could be received as voluntary boarders at the request of their parents or guardians from 18 to 16. Another amendment was agreed to omitting the word "unmarried," Earl Russell explaining that with the reduction of the age those words were unnecessary, because now by law young people could not be married under 16. These amendments would meet objections raised during the Committee stage.

Lord DANESFORT moved a new subsection to ensure that a young person should not be sent to an institution on a doctor's recommendation which was old or out of date. It was, he said, founded on the analogy of Clause 5 (5) which made provision for putting a man into a place of mental treatment if he was incapable of volition. The recommendation of the doctor under Clause 1 of the Bill had to state that the person was likely to benefit from treatment for mental disorder. That might be true at or very shortly after the time when the person was examined, but if the recommendation were used a month or two after the examination the statement might be quite untrue, because the patient might have recovered, and possibly might no longer be likely to benefit by being put in a place for mental treatment. Therefore his proposal was that the medical recommendation should cease to have effect at the expiration of 14 days from the last date of examination.

Earl RUSSELL said that the amendment was perfectly proper. The object was to avoid a stale recommendation. He would accept the amendment if it could be moved in the following form :—

4. "The medical recommendation shall cease to have effect for the purposes of this section on the expiration of fourteen days from the last date on which the person to whom the recommendation relates was examined by the medical practitioner for the purposes of making the recommendation."

Lord DANESFORT agreed to the alteration and the amendment was carried.

A drafting amendment moved by Earl RUSSELL, to omit the words "superintendent or other person in charge, or to the person with whom he is residing in single care," and to substitute "person in charge," was agreed to.

Persons Incapable of Volition.

Clause 2 deals with notice of reception, death, and departure of voluntary boarders, and makes provisions as to boarders who become incapable of volition.

On the motion of Earl RUSSELL, a new Subsection (4) was agreed to, providing that if a voluntary boarder under 16 ceased to have any parent or guardian, or if his parents or guardians were incapable of performing, or refused or persistently neglected to perform their duty as such, the person in charge should report the circumstances of the case and the condition of the boarder to the Board of Control and the Board should consider the report and give such directions as they thought fit.

Clause 5 makes provision for treatment without certification of persons temporarily incapable of volition.

Earl RUSSELL moved to amend Subsection 3 so as to provide that an application should be accompanied by a recommendation signed by two registered medical practitioners of whom one should be a medical practitioner (not being the usual medical attendant of the person to whom the application related) approved by the Board of Control for the purpose of making recommendations under this section, and the other should be, if practicable, the usual medical attendant of the person to whom the application related.

The Earl of ONSLOW said that as originally drafted the Bill said that it should be the family doctor, or if not then a person approved by the Board. In the event of there being no family doctor would two doctors be approved by the Board ?

Earl RUSSELL said that the clause would read that it should be a medical practitioner approved by the Board, and if practicable a family doctor. If there was no family doctor it would be any doctor that could be obtained.

Lord MERRIVALE said that Earl Russell was justified in what he was doing. He had been very much surprised on the previous day, among various communications from medical men, to receive one from a medical man with, he supposed, as large a private practice as there was in relation to matters of unsound mind and defective mentality, endorsing insistence that there should be some additional safeguard. He hoped that this additional safeguard would be agreed to.

The amendment was agreed to.

On the motion of Earl RUSSELL another new Subsection (12) was agreed to as follows :—

"A person received as a temporary patient shall not be detained as such for more than 28 days after the date at which he regains volition, unless in the meantime he again becomes incapable of volition."

He explained that this gave effect to Lord Cranbrook's proposal that a temporary patient should be discharged 28 days after recovering volition unless he relapsed in the meantime. The effect would be to give him more avenues of discharge than any other patient.

Power to Make Rules.

Considerable discussion took place on Clause 15, which gives power to make rules.

Earl RUSSELL moved in a different form a new subsection which had been accepted in Committee, providing that rules made, under section 338 of the principal Act, after Jan. 1st, 1931, should be laid before both Houses of Parliament, and if within 21 days an address was presented to His Majesty by either House praying that a rule should be annulled it should be void.

On the suggestion of Viscount BRENTFORD the date of Jan. 1st, 1931, was omitted, the noble Lord pointing out that power to make rules began long before the Act otherwise came into operation.

Viscount BRENTFORD then moved a further amendment to the new subsection providing that the rules which not only the Ministry of Health but, under other clauses, the Board of Control were empowered to make, should not come into force where they modified or adapted this measure or any other enactment until the rule had been approved by each House of Parliament. He urged that if there was to be any change made in this legislation it should be done only by Parliament. In the subsection power was given to the department to make rules which would alter this Bill.

Earl RUSSELL pointed out that the rule-making power which the subsection proposed would not enable them to alter the Bill. The rules, apart from the administrative rules, which would not come under Viscount Brentford's amendment, would not make new laws. They would be the most trifling adaptations of an old Act to new circumstances, and would in no sense alter anything that Parliament had agreed to. He hoped the House would not insist on the amendment.

After further discussion, Earl RUSSELL suggested that the matter should stand over till the third reading for further consideration and consultation.

Viscount Brentford's amendment to the subsection was agreed to.

The report stage of the Bill was concluded.

The Third Reading.

On Dec. 19th the Bill was read the third time.

On Clause 2 (notice of reception, death and departure of voluntary boarders, and provisions as to boarders who become incapable of volition),

Earl RUSSELL moved to omit from subsection (3) the words "in the opinion of the medical superintendent or such other person as aforesaid." These words, he said, were inserted at the instance of Lord SANDHURST on the committee stage, but they were found to be inappropriate to the Bill. The question of whether a patient was capable of volition or not was a question of fact, and it had to be

ascertained, and was naturally founded on the opinions of the people who had observed it.

The amendment was agreed to and the Bill was passed.

SCOTTISH HEALTH VOTE.

On Dec. 16th the House of Commons went into Committee on a supplementary estimate of £10,650 for the Scottish Department of Health, including grants in aid of the Highlands and Islands Medical Service. The estimate was agreed to. The report stage of the same estimate was agreed to on the 17th.

HOSPITALS AND MOTOR ACCIDENTS.

On Dec. 18th the House of Commons went into Committee on the Road Traffic Bill, the Earl of DONOUGHMORE, Chairman of Committees, in the chair.

Third Party Insurance.

On Clause 34 (requirements in respect of policies for third party insurance),

Lord LUKE moved an amendment to provide that a third party risk insurance policy should ensure to any hospital treating any bodily injury caused by a motor accident payment of the cost of such treatment up to a maximum payment of £25. He said that in 1927 the hospitals of the provinces treated 26,000 in-patients and 39,000 out-patients in their wards as a result of motor accidents. The cost to those hospitals was approximately £230,000. The actual money received from insurance offices and patients was £26,000, so that to the extent of eight-ninths of the cases the hospitals bore the expense. If these cases were divided over all the hospitals of the kingdom evenly, probably it would not be so unfortunate for the few hospitals which now received these cases in excess—the hospitals near to the great trunk roads. All good motorists would pick up an injured person and take him to the nearest hospital, but the cure was usually at the expense of that hospital, and the hospitals were continually saying that these casualties from the roads were using the beds that had been provided for meeting local hospital needs. The maximum payment which he proposed was based on £4 per week for six weeks. That £4 was supposed to cover the out-of-pocket expenses of a hospital treating such a case, and the figures he had quoted would show that the average expense would not be greater than about £4. If such a risk were added to the present risk in anyone's policy the insurance offices said that the cost would only be about 1*s.* or 2*s.* additional. It seemed only reasonable that hospitals should have this first charge on the insurance, because if the hospitals were not handy to deal with these motor accidents motorists would be placed in a very difficult position.

Viscount KNUTSFORD said of cource this amendment would not deal with all the accident cases brought to hospitals through motor accidents, but only with those where a person was insured against third-party risks, and where the accident was due to his negligence. It seemed really unfair that if a man was injured in an accident and was taken to a nursing home and treated by a doctor the insurer should pay the expenses as a liability in consequence of his negligence, but that if the same patient was taken to a hospital the insurer was not liable, because the hospital had no legal claim to recover the costs incurred by it. In fact the insurance company might refuse to pay, as it was not a legal liability, and they would be justified from the point of view of their shareholders. Although the treatment of these cases had increased enormously, and although this was a very serious burden on the hospitals, they made no complaint. They were only too glad to help injured people, but they did think that the present position was very unfair. He was sure that the amendment was a fair one.

Lord SOMERLEYTON, as one who had been connected for over thirty years with three central funds—the Saturday Fund, the Sunday Fund, and King Edward's Hospital Fund—said he desired to support the amendment.

Viscount BERTIE of THAME moved an amendment to the amendment to the effect that any surgeon or medical practitioner rendering first-aid in a motor accident should have a claim under the policy. He said that one often read in the press letters from doctors who lived nearby the scenes of frequent accidents stating that they were scandalously treated by persons who not only did not pay them but who went away with articles which had been lent to them and did not return them.

Lord STANLEY of ALDERLEY supported the amendment, but not the amendment to the amendment. He said that if the injured person were taken to a medical practitioner the claim of that medical practitioner would be part of the damages to be paid by the motorist and would be a proper claim against the insurance company. But that was not the case in regard to hospitals, he understood. Hospitals were voluntary associations, and as such could not institute an action or make any legal claim against the injured person, or against the person who caused the injury. If they were to deal voluntarily in future with motor casualties he thought that some of the small hospitals might find even greater difficulty in carrying on than at present.

Lord ATKIN said that it might be that there were insuperable difficulties in a hospital making a charge against a person who came for attention and who was treated by them, but he did not know what those difficulties were in law. He saw no reason why a hospital should not say that they would make a charge for any person who came to them who was injured in a motor accident, and that they would remit that charge if in fact it was not covered by insurance. If that were done the object of the amendment would be covered. If there were insuperable difficulties the real remedy was to make some such provision as that any person who had been injured by the negligence of a motorist should be entitled as part of his damages to recover a reasonable sum, not exceeding £25, which he might have paid, whether legally liable or not, to a hospital for treatment of his injuries. That would enable him to recover from the insurance company. He doubted whether that would mean any extra premium, because medical attention was always one of the elements in the damages which an insurance company laid themselves out to pay. The form of provision contained in the amendment would be very difficult to enforce.

Lord DANESFORT supported the amendment. The point raised by Lord Atkin was a good technical point, but was only technical. All that would be necessary would be to change the form of the amendment to meet it.

Lord EBBISHAM, in supporting the amendment, said that he had some experience in connexion with four small hospitals in Surrey. They found that in the last completed year an expenditure had been made for patients injured by motor-cars, but resident outside their locality, of at least £2000. A great injustice was being done to hospitals throughout the country.

The Government's Reply.

Earl RUSSELL, replying for the Government, said that he was aware of the grievance of the hospitals in this matter. It had become much more acute in the last two or three years. But this particular amendment in this particular part of the Bill was not the way to remedy the grievance. It would be inconsistent with the general scheme of insurance in Part II. of the Bill and it would not be by any means the best way to do it. It would not include all cases. There seemed to be in their lordships' House a practically unanimous feeling that something of this sort should be done. He suggested that the proper course would be to draft a separate clause which would provide in one way or other, not for the insurance only of some persons who were injured, but for the insurance of all persons who were injured—at any rate of all motorists. If Lord Luke and Lord Knutsford would confer with him and his advisers before the Report stage he would see if a separate clause could be drafted to meet the case. There was only one word of warning he would utter for the consideration of those interested in hospitals. If once a hospital began to receive contributions from any source in a manner which was not voluntary it seemed to him that it would be altering its character in a way which might be embarrassing and which might in the end, if the income from that source was considerable, expose it to some form of public management.

Viscount BRENTFORD, speaking on behalf of the British Hospitals Association, said he hoped that Earl Russell would approach this matter from the point of view of Lord Luke's amendment and not from the point of view of an imposition of a certain sum per head on motorists to raise a fund. What was needed was to enable the hospitals to do what the ordinary doctor or the ordinary nursing home could do.

Earl RUSSELL said that he proposed to consider the matter with a perfectly open mind and to consider any suggestions from those able to make them with a view to producing the best agreed clause, if one could be drawn.

Viscount CECIL of CHELWOOD said that the grievance would not be dealt with by approaching it in the manner proposed.

Viscount BRENTFORD: Why?

Viscount CECIL: Because the beds are actually filled. That was the real point. Country doctors would tell them pitiful stories of how the poor were utterly unable to get hospital treatment because the hospitals were absolutely filled with motorists at a certain period of the year.

Replying to Viscount BERTIE, Earl RUSSELL said that he thought that doctors who rendered assistance to these cases were protected, if they were entitled to sue.

The amendment and the amendment to it were both withdrawn.

The Bill passed through Committee.

THE NATIONAL RADIUM FUND.

On Dec. 19th, on the motion for the Second Reading of the Consolidated Fund (No. 1) Bill,

Sir KINGSLEY WOOD said he wished to deal with a matter which had aroused a considerable amount of interest not only in the House, but outside, in relation to a considerable sum of money raised for the National Radium Fund. A large number of people had looked with the greatest hope and many of them with a good deal of anxiety to the use to which that fund would be put. He (Sir Kingsley Wood) was not questioning the belief that a great deal of good might be accomplished by the use of this large sum of money. He supposed that cancer was one of the most terrible diseases that afflicted mankind. The use of radium in the treatment of cancer, at any rate in its early stages, was one of the most hopeful methods. This considerable sum of money had been vested in the hands of specially constituted trustees who had been very carefully chosen. He had not seen a word of criticism in relation to the men who were serving as trustees of the fund. He admitted at once in putting the question as to what had been done and what purchases of radium had been made that there was very great difficulty in relation to the purchase of radium in this country at the present time. He understood that the only place to which the trustees could go to purchase radium was the Belgian Congo. That raised a very important point of view as to the outlook of the trustees. He agreed that unless they were very careful they might very well be held up and have to pay a very high price for radium.

Mr. KELLY: Why not go to Canada?

Sir KINGSLEY WOOD said that that was one of the difficulties of the position. It was stated in the report upon which this question was largely founded that attempts were being made to find radium in other countries in the world and hopes were held out that radium might be found in the British Dominions. He thought there could be nothing finer for mankind, especially mankind suffering from a terrible disease like cancer, if it was possible to find radium in any other country than the one he had mentioned. He would like to know how much money had been expended in the purchase of radium in this country and whether it had been possible to obtain radium in any of the Dominions or any foreign country other than the Belgian Congo.

Miss SUSAN LAWRENCE (Parliamentary Secretary to the Ministry of Health) said that she could not reply at any length on this question. The Radium Trustees were not appointed by the Ministry of Health but by Royal Charter. Therefore, the Ministry of Health was not responsible for the work of the Radium Commission in so direct a way. It was an independent body set up by Parliament and would present an annual statement and accounts in a short time. In reply to the specific questions put by Sir Kingsley Wood she might say that they had agreed to purchase 10 grammes of radium at $50 per milligramme from the Union Minerale of Belgium, and they had another 4 grammes already in their possession with option to purchase. All the radium had been purchased from the Belgian company.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 18TH.

Overcrowding in Greater London.

Mr. MILLS asked the Minister of Health if his attention had been called to the decreasing sleeping accommodation to the acre in London by the destruction of dwelling-houses and their conversion into shops and factories; whether he was aware that in many areas of London the sleeping accommodation had reached the density of 90 to the acre; and what steps he proposed to take to stop this danger to the inhabitants of inner London.—Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: The difficulties of housing the population of Greater London were considered by the Royal Commission on the Local Government of Greater London. The proper control of development in Greater London is a matter which is being considered by the Greater London Regional Committee. I may add that my right hon. friend hopes to introduce legislation extending town-planning powers to build up areas.

After-care of Mental and Physical Defectives in Scotland.

Dr. FORGAN asked the Secretary for Scotland the total amount of Government grants made last year to committees in Scotland concerned with the after-care of mental and physical defectives; the number of the committees among which this amount was divided; and the average sum received by each.—Mr. ADAMSON replied: The total amount of Government grants made last year to societies in Scotland assisting and supervising uncertified mental defectives was £750. Of this sum £600 was paid to a central association, with headquarters at Paisley, which operates through local care committees in various parts of Scotland, and £150 to a society in Edinburgh. Of the £600 grant to the central association a sum of £200 was allocated last year to 11 local care committees—an average of approximately £18 each.

THURSDAY, DEC. 19TH.

Health Insurance Administration.

Mr. LLEWELLYN-JONES asked the Minister of Health whether he would furnish a list of advisory or other committees set up by the Ministry of Health in connexion with the administration of national health insurance or of public health generally since the commencement of 1925; and whether he would indicate on which of these committees provision had been made for the inclusion of members from Wales, including Monmouthshire, and the number of such members on each committee.—Mr. GREENWOOD replied: I am not in a position to reply specifically to the second part of the question, since I am advised that in many instances it has not been considered relevant to the object for which the committee was set up to inquire whether all or any of the members could be considered to belong to particular parts of Great Britain. The following is the list of committees set up by the Ministry of Health in connexion with the administration of national health insurance or public health generally since the commencement of the year 1925:—

Committee on Post-Graduate Medical Education; Committee on Vaccination; Dental Benefit Joint Committee—which has now been replaced by the Dental Benefit Council; Advisory Committee under Therapeutic Substances Act, 1925; Medical Advisory Committee on Decennial Revision of International List of Causes of Death; Committee on the Optical Practitioners (Registration) Bill; Advisory Committee under Article 41 of Medical Benefit Regulations, 1928; Committee on Ethyl Petrol; Committee on Training and Employment of Midwives; Committee on Maternal Mortality; Pharmaceutical Distribution Committee under Article 25 of Medical Benefit Regulations, 1928; Joint Advisory Committee on Pollution of Rivers and Streams; Advisory Committee on the Definition of Drugs for the Purposes of Medical Benefit under the National Health Insurance Acts.

Nursery Schools.

Mr. DAY asked the President of the Board of Education how many new nursery schools had been approved by the Board during the previous 12 months.—Sir CHARLES TREVELYAN replied: Fourteen new nursery schools have been approved by the Board since Nov. 1st, 1928.

Overcrowding of Public Mental Hospitals.

Mr. SORENSEN asked the Minister of Health what action he was taking to prevent the present overcrowding of public mental hospitals.—Mr. GREENWOOD replied: Though there is a shortage of accommodation in public mental hospitals, there are relatively few cases of serious overcrowding. The position has already received my attention. Approval has been given to certain proposals for extending mental hospital accommodation, and others are under consideration. It is anticipated that these extensions will largely meet the present shortage; and further alleviation of the position may result from the survey of institutional accommodation which may become available under the Local Government Act.

Care of Mentally Deficient Children.

Mr. SORENSEN asked the Minister of Health what action he was taking to provide suitable accommodation and care for the many cases of mentally deficient children who had been recommended for institutional treatment by mental deficiency committees but who were not receiving it.—Mr. GREENWOOD replied: I am aware of the existing inadequacy of institutional accommodation for mental defectives, both adults and juveniles, and local authorities are being urged to carry out their statutory duty to provide institutional accommodation.

Hours of Industrial Employment.

Lady CYNTHIA MOSLEY asked the Minister of Labour when she would introduce a Bill for the regulation of hours in industry.—Miss BONDFIELD replied: The Hours of Industrial Employment Bill is in course of preparation.

Replying to a further question by Mr. LOUIS SMITH, Mr. GREENWOOD said he hoped to introduce the Bill on an early day after the Christmas recess.

Inspection of Vivisection Experiments.

The Duchess of ATHOLL asked the Home Secretary the number of visits of inspection per annum paid on an average by the inspectors of experiments on living animals; and whether the dates of these visits were known beforehand to the persons conducting these experiments.—Mr. SHORT replied: During the five years 1924–28 inclusive 3315 visits were made or an average of 663 per year. Of

the total, 146 (or an average of approximately 29 a year) visits were made by appointment for the special inspection of premises; for interviews with applicants for a licence; or for discussing with licensees questions arising out of their work under the Act. In all other instances (3169) the visits were made without previous notice.

Unsplintable Glass in Public Vehicles.

Commander SOUTHBY asked the Home Secretary whether he would consider taking steps to make it compulsory for all hackney carriages and other vehicles plying for hire to be fitted with unsplinterable glass.—Mr. SHORT replied: The jurisdiction of my right hon. friend in this matter is limited to London. He has considered it in consultation with the Commissioner of Police and he is afraid that it is not practicable at present to enforce the use of unsplinterable glass in public service vehicles generally on account of the cost, but the matter will not be lost sight of.

Medical News.

UNIVERSITY OF OXFORD.—At recent examinations the following candidates satisfied the examiners in the undermentioned subjects:—

Medicine, Surgery, and Obstetrics.—J. A. Brown, L. J. Clapham, C. M. Duncan, W. B. Fiddian-Green, J. K. Marshall, Q. St. L. Myles, R. S. B. Pearson, C. R. Salkeld, G. Secker Walker, W. B. Williams, Annie D. M. Adams, and Ruth Sandeman.

Pathology.—R. E. Adam, I. M. Bell, W. D. W. Brooks, G. H. Buck, J. M. Cribb, F. R. Crookes, Shelton Durham, N. A. Gillespie, Newton Heath, G. W. Hinchliff, J. E. Jenkins, H. de B. Kempthorne, G. B. Malone-Lee, J. H. Peel, W. S. Tegner, H. A. Treble, F. M. Trefusis, O. S. M. Williams, and Elspeth W. Smellie.

Forensic Medicine and Public Health.—H. H. Aitchison, Fairfax Bell, W. D. T. Brunyate, G. H. Buck, J. L. Clapham, C. M. Duncan, W. B. Fiddian-Green, C. R. Greene, Arthur Guirdham, Francis Hawking, W. H. McMenemey, J. K. Marshall, W. E. S. Merrett, R. D. Newton, J. N. O'Reilly, N. C. Parfit, R. S. B. Pearson, F. M. Trefusis, Amy C. E. Clarke, and Victoria M. Robinson.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were successful:—

M.CHIR.

F. J. Milward.

THIRD EXAMINATION FOR M.B. AND B.CHIR.

Part I., Surgery, Midwifery, and Gynæcology.—G. G. Allan, G. N. Bailey, G. O. Barber,* R. E. Barnsley, J. H. Bentley, R. M. Bolam, W. V. Bowman, A. D. D. Broughton, A. C. Crooke, A. M. Cunningham, H. Curtis, M. Ellis, R. B. Floyd, M. S. M. Fordham, I. J. Franklen-Evans, A. W. Franklin, A. S. Hall, P. E. T. Hancock, A. G. J. Harris, J. E. M. Harrison, F. T. J. Hobday, W. V. Howells, E. H. Hudson, C. G. Jobbins, M. M. StG. Johnstone, J. G. Jones, H. V. Knight, E. Landau, R. S. C. McDade, S. McDonald, A. P. McEldowney, R. W. Malim, C. E. P. Markby, R. A. Maynard, B. C. Nicholson, G. L. Ormerod, R. G. Orr, V. P. Paxon, J. O. Poynton, C. B. Prowse, T. G. Reah, G. H. Sanderson, J. E. Semple, R. H. B. Snow, G. H. G. Southwell-Sander, R. S. Stacey, E. T. W. Starkie, B. C. Thompson, C. P. K. Toland, F. S. Winton, C. H. England, and D. P. Firmin.

*Passed in Surgery only.

Part II., Physic, Pathology and Pharmacology.—R. Anderson, A. R. Banham, C. M. Barker, D. W. Bawtree, J. V. Broad, A. T. Curnow, C. J. M. Dawkins, Digges la Touche, R. H. Dyer, J. H. L. Easton, P. H. Fox, S. E. F. Gooding, G. J. Gross, A. H. Gurney, W. Heath, A. C. de B. Helme, J. S. Hensman, G. Herbert, H. P. Hutchinson, T. C. Jameson Evans, C. G. Jobbins, E. R. Keeble, R. W. Knowlton, O. L. Lander, R. W. McConnel, S. R. Matthews, R. B. Mayfield, E. J. Neill, T. N. Parish, J. A. Pocock, C. D. Politeyan, R. B. Pringle, A. W. Williams, J. K. Willson-Pepper, G. N. Wood, F. G. Wood-Smith, B. Wright, and M. A. Willcox.

UNIVERSITY OF EDINBURGH.—At a graduation ceremonial on Dec. 20th the following degrees were conferred:—

M.D.—Flora H. M. Calder, **T. C. Mitchell, **R. M. Murray, Lyon, †Eustace Russell, G. S. Scott, *Ta-Ming Tso.

Ch.M.—**Alice Bloomfield.

M.B., Ch.B.—W. S. Anderson, Reginald Austin, Ismay Bannerman, T. M. Beveridge, G. F. Bradbury, R. M. Bremner, J. F. C. du Toit, F. G. M. Fraser, E. E. Goldman' James Gorman, D. H. Hooper, E. G. Hurd-Wood, Isidor Kaplan, H. I. Lahouri, L. E. Lucas, K. C. Mackenzie, A. C. M'Laren, D. J. A. MacLean, Daniel Macleod, H. J. Melville-G. R. Parker, J. L. Parker, R. A. P. Paul, G. A. G. Peterkin, J. C. Robertson, †Nirodbaran Talukder, Anne Tillema, and S. C. H. Watters.

Diploma in Psychiatry.—†T. A. H. Munro.

Diploma in Public Health.—†K. V. R. Choudari.

AWARD OF FELLOWSHIP.

The Syme Surgical Fellowship was awarded to Dr. Thomas Carlyle Mitchell.

* Commended for Thesis. ** Highly commended for Thesis.
† In absentia.

UNIVERSITY OF SHEFFIELD.—At recent examinations the following were successful:—

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Part I.—K. G. A. Barlow, Clem England, M. B. Hallam, Firth Hudson, Constance N. Jenkinson, S. K. Panniker, and Allan Spencer.

Part II.—Abraham Cohen, R. B. Gould, Bessy Hatherley, and J. H. Wilbourn.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following were successful:—

M.CH. ORTH.

W. J. Eastwood, W. L. MacDonald, and J. F. Shepherd.

M.D.*

K. M. Cobban, L. Earlam, R. R. Evans, J. F. Galloway, and Mary S. Share-Jones.

FINAL EXAMINATION FOR M.B. AND CH.B.

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Part III. (*1923 Regulations*).—J. P. Flanagan, R. N. Johnson, I. Lipschitz, and J. L. Walker.

Part A. (*1924 Regulations*).—W. Dodd, J. J. M. Erskine-Young, M. Glynn-Morris, C. K. Holland, H. D. Owen, J. Polonsky, and H. E. C. Sutton.

Public Health.—D. I. A. Williams.

* To graduate July, 1930.

DIPLOMA IN TROPICAL MEDICINE.

S. D. Ahuja, R. E. Anderson, C. G. Booker, W. A. Bullen, E. N. Callum, P. P. D. Connolly, J. A. Cowan, G. Graham-Cumming, A. V. Greaves, G. S. Hale, A. T. Howell, C. N. Latham, J. E. McMahon, A. A. Miller, A. Rosenbloom, C. K. Row, R. N. Sewal, H. Singh, G. A. Talwrn-Jones, and H. N. Turner.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College on Dec. 18th, with Dr. J. Haig Ferguson, the President, in the chair, the following 23 candidates (out of 70 entered) who passed the requisite examinations between Sept. 26th and Oct. 4th, were admitted Fellows:—

Frans Bekker, Philip William Hulme Bleasdale, John Boyd Colquhoun, John Comrie, Cedric Duncombe, Andrew May Duthie, Duncan Hugh Fraser, Cecil Alexander Gardiner, Wallace John Gill, Alastair Livingston Gunn, Hukam Chand Gupta, James Haslam, Elinor Drinkwater Jackson Laurence Henry Leggett, Arthur Cecil Liesching, Vivian Mercer Metivier, David Ritchie Paterson, John Edward Piercy, Manindra Nath Sarkar, Sher Singh, George Ferguson Skinner, Oscar John Stahl, and Ryno Stockenstron Verster.

PRINCESSES AT HOSPITALS. — Princess Louise, Duchess of Argyll, recently opened a new wing of the Plaistow, E., Maternity Hospital and District Nurses' Home. The hospital now has 56 beds and is the fifth largest of its kind in London. The addition contains two wards of eight beds each, two single-bed wards, a labour ward, and infants' nursery. There has hitherto been such heavy pressure upon the accommodation that temporary beds have had to be in use continuously. The institution trains 200 midwives annually and 6000 mothers are attended every year. During the last decade the hospital's maternal mortality has been approximately 1 in 2000. The working expenditure exceeds £22,000.—Extensive additions to the South-Eastern Hospital for Children at Lower Sydenham were opened last week by Princess Marie Louise. The out-patients' department and the nurses' home have been enlarged, rooms have been provided for the medical and surgical staffs, for sunlight and massage treatment, and for children being treated for tonsils and adenoids.

Appointments.

Bristol General Hospital: WOOD, D., F.R.C.S. Eng., Honorary Surgeon; GRIFFITHS, S. J. H., M.B., Ch.B. Bristol, F.R.C.S. Eng., Honorary Assistant Surgeon; BURGESS, N., M.D., B.Chir. Camb., M.R.C.P. Lond., Honorary Assistant Physician in the Skin Department; TAYLOR, A. L., M.D., Ch.B., Leeds, Honorary Pathologist; KETTLEWELL, N. H., L.D.S. R.C.S. Eng., L.M.S.S.A. Lond., Honorary Dental Surgeon.

City of London Maternity Hospital: PRICE, J. A., M.B., B.Ch., Belf., Resident Medical Officer; SIMMONS, R. W. A., B.M., B.Ch. Oxf., Assistant Resident Medical Officer.

Queen Charlotte's Maternity Hospital: HUGHES, TOM. I., L.R.C.P. Lond., M.R.C.S., Senior Resident Medical Officer; JENNINGS, H. T., M.B., Ch.B. N.Z., F.R.C.S. Edin., Assistant Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: FARMER, M. L., M.B., Ch.B. Liverp. (Shefford, Bedford); MEAD, G. H., L.R.C.P. Lond., M.R.C.S. (Eckington, Derby); SMITH, E. F., M.B., B.S. Lond. (Wokingham); and CREIGHTON, J. A., M.B., C.M. Glasg. (Calvert, Buckingham).

Vacancies.

For further information refer to the advertisement columns.

Acton Hospital, W.—Res. M.O. £150.
Belfast, Joint Nursing and Midwives Council, Northern Ireland.—Examiner of Midwives.
Birmingham, Dudley-road Hospital.—Gynæcologist and Obstetrician. £700.
Birmingham, Monyhull Colony, King's Heath.—Res. Asst. M.O. £250–£350.
Birmingham, Selly Oak Hospital.—Two Cas. O.'s. Each at rate of £200.
Blackburn and East Lancashire Royal Infirmary.—Res. H.P. £150.
Bolton, Townley's Hospital, Farnworth.—Second Asst. M.O. £225.
Bootle Borough Hospital.—Hon. Laryngologist and Aurist.
Bradford Children's Hospital.—H.S. and H.P. Each £120.
Bradford Royal Infirmary.—Res. Surg. O. £250.
Burnley, Victoria Hospital.—H.S. At rate of £125.
Canterbury, Kent and Canterbury Hospital.—H.S. and H.P. Each at rate of £125.
Cardiff, Prince of Wales' Hospital.—H.S. for Crossways Country Branch Orthopædic Hospital. £120.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S.'s. At rate of £120 and £100 respectively.
Charing Cross Hospital, Strand, W.C.—Non-resident House Anæsthetist.
Durham County Mental Hospital.—Jun. Asst. M.O. £350.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
Great Yarmouth County Borough.—Asst. M.O.H. and Asst. Tub. O. £600.
Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also Clin. Asst. M.O. for Venereal Dept. £1 1s. per session.
Hull Royal Infirmary.—Third H.S. Also Asst. H.P. At rate of £150 and £130 respectively.
Leeds University.—Tutor in Obstetrics and Gynæcology. £475.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150. Also Hon. Obstet. Surg.
London Hospital Medical College, Mile End, E.—Liddle Triennial Prize. £120.
Manchester, Ancoats Hospital.—Asst. Pathologist. £350.
Manchester, Babies' Hospital, Burmage-lane, Levenshulme.—Sen. Res. M.O. At rate of £125.
Manchester, Salford Royal Hospital.—H.S. for Orthopædic Dept. At rate of £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Northampton Education Committee.—Asst. School Dentist. £450.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150. Also Hon. Asst. S.
Redruth, Cornwall, West Cornwall Miners, and Women's Hospital. Res. M.O. £200.
Rochdale Infirmary and Dispensary.—Jun. H.S. £175.
St. John's Hospital, Lewisham, S.E.—Radiologist.
St. Mary's Hospital, W.—Asst. Pathological Chemist. £300.
Sheffield, Jessop Hospital for Women.—Two Asst. H.S.'s. Each at rate of £100.
Southampton County Borough.—School Dentist. £450.
Swansea County Borough.—Asst. M.O. £600.
Walsall General Hospital.—Cas. H.S. At rate of £120.
West London Hospital, Hammersmith-road, W.—Asst. Dental. S.
Westminster Hospital, Broad Sanctuary, S.W.—House Anæsthetist. At rate of £100.
Wigan Infirmary.—Third H.S. £150.

Births, Marriages, and Deaths.

BIRTHS.

FINLAY.—On Dec. 14th, at The Gables, Honiton, Devon, the wife of Dr. J. E. Finlay, of a son.

MARRIAGES.

JONAS—PETLEY.—On Dec. 19th, at All Saints', Ennismore-gardens, William Howard Powning Jonas, B.A., M.R.C.S., L.R.C.P., of "Brooklands," Hemel Hempstead, Herts, to Kathleen Isabel, only daughter of Mr. and Mrs. C. Ralph Petley, of Vert Lac, Lausanne, Switzerland.

DEATHS.

CANDY.—On Dec. 16th, George Spence Candy, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., aged 44.
DWYER.—On Dec 16th, at "The Mount," Lapworth, Warwickshire, after a short illness, Henry Hamilton Dwyer, L.R.C.P. & S.I., L.M.
EGAN.—On Dec. 11th, at Kingston, Jamaica, Major William Egan, R.A.M.C., D.S.O., O.B.E.
MILLIGAN.—On Dec. 19th, at a nursing home, Sir William Milligan, M.D., LL.D., of Westbourne, Rusholme, Manchester, and Polmood, Broughton, Peeblesshire.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.
Prince of Wales's General Hospital, Tottenham, N.
The same arrangements will be made as were announced in THE LANCET of Dec. 14th.

Notes, Comments, and Abstracts.

THE USES OF X RAYS.

THE exhibition of radiography just concluded by the Royal Photographic Society of Great Britain is to be the first in a series illustrating the "uses of photography in the service of man"; it attempted especially to illustrate the history and development of the scientific and industrial value of X rays. Various forms of early X ray tubes, as well as recent apparatus, were lent by the Davy Faraday Laboratory, by Mr. Cuthbert Andrews, and Mr. Geoffrey Pearce. Dr. W. H. George lent an exhibit demonstrating the use of photographic grids in X ray crystallography.

The medical section showed a number of radiograms of those surgical and medical conditions in which diagnosis is materially helped by use of X rays. Advances in dental work included simultaneous photography of the profile and the jaw, so that artificial teeth may be made to conform to the normal shape of the face as much as possible. Excellent photographs demonstrating the use of tetraiodophenolphthalein in cholecystography and collargol in pyelography were shown, while the uses of barium in defining œsophageal obstruction, carcinoma of the stomach, and intestinal conditions of various kinds, were illustrated. The number and variety of photographs shown was somewhat limited from a medical point of view, but as the intention was to demonstrate the photography rather than the innumerable occasions of its utility, this was not surprising. The radiograms in this section were lent by Kodak, Ltd., by Mr. H. T. Ferrier, and by the Ilford X ray Department.

In the section devoted to transparencies various recent improvements in apparatus were demonstrated, including a portable X ray apparatus made by the "Solus" Electrical Company. Mr. Herbert Flower lent an interesting series of negatives showing X ray exposures versus screen exposures on various bone subjects. The X ray exposures showed a marked gain in contrast without loss of detail. Photographs of old forms of apparatus, including early patterns of couches in which the tube was unprotected, were sent by Messrs. Schall and Son, Ltd., and could be compared with the latest types which were shown with the transparencies.

The use of X rays in detecting flaws in metal castings was demonstrated in the industrial section, and the value of this one function in the service of man is hard to estimate. It was unfortunate that the absence of a photographic aspect excluded deep ray therapy from representation in an exhibition designed to demonstrate the value of the Rontgen ray.

TWO DIARIES FOR 1930.

THE Anglo-French Drug Company (238A, Gray's Inn-road, London, W.C. 1) have sent us a copy of their block diary for 1930, measuring 6 by 4½ inches, and showing a page to a day. It serves as a useful accessory to the writing table, and attached to the inside of the front cover is a concise list of the pharmaceutical products manufactured and distributed by the firm.—We have also received the medical diary issued by Messrs. Burroughs Wellcome and Company. It comprises 404 pages, measuring 6½ by 3¾ inches, bound in a case, and gives therapeutic notes, an index of diseases and treatments, symptoms and treatment of poisoning, notes on diet, and other useful information, including a list of the firm's well-known "Tabloid" products. Either of these diaries may be obtained on application.

Radium Needles.—Prof. F. L. Hopwood writes that in the paper presented by Miss Smallman and himself at the Radiological Congress (THE LANCET, Dec. 14th, p. 1276) it was stated that with half a gramme of radium distributed in needles and containers 899 cases were treated in *two* years (not one year) at St. Bartholomew's Hospital.

THE address of the National Association for the Prevention of Tuberculosis is now Tavistock House North, Tavistock-square, London, W.C. 1.

A HOSPITAL'S CLAIMS FOR PAYMENT.—Some time ago the statutes of the Royal Salop Infirmary at Shrewsbury were altered to enable the governors to charge motor accident patients with the cost of their treatment and maintenance. It is now officially reported that the result has been disappointing. Sixty-four such patients have since been discharged, and were presented with accounts amounting to £868. Eight patients only have paid, the entire refund amounting to £94 11s.

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A-12

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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

CAMPBELL ORATION.

Progress in Urology. By Prof. ANDREW FULLERTON, M.Ch. 1345

ORIGINAL ARTICLES.

The Bruit D'Airain (Coin Sound, Bell Sound). By A. I. G. McLAUGHLIN, M.B., and A. J. DIX-PERKIN, M.B. 1351

Assam's Malaria Problems and Their Solution. By G. C. RAMSAY, M.D. .. 1356

CLINICAL AND LABORATORY NOTES.

Pain in Relation to Duodenal Ulcer. By DONALD MACLEOD, F.R.C.S. 1358

Hæmostasis in the Mastoid Operation. By N. ASHERSON, F.R.C.S. 1359

Emphysema Treated by Mechanotherapy. By A. KELLGREN-CYRIAX, L.R.C.P. 1360

MEDICAL SOCIETIES

Royal Society of Medicine. Section of Surgery: Subsection of Proctology: Complications of Operations for Piles ... 1360

Royal Academy of Medicine in Ireland: Section of Surgery: Diverticulitis 1362

Pan-Pacific Surgical Congress, Honolulu: Surgery of the Alimentary Tract 1362

NEW INVENTIONS.

Radium-Needle Introducer. By D. A. CROW, M.B.—(*Illustrated*) 1366

A Syringe and Needle for the Injection of Hæmorrhoids. By W. B. GABRIEL, F.R.C.S.—(*Illustrated*) 1367

A Prostatectomy Incising Clamp. By W. K. IRWIN.—(*Illustrated*) 1367

REVIEWS AND NOTICES OF BOOKS.

Internal Secretions of the Ovary. By A. S. Parkes, M.A. 1367

Beiträge zur praktischen Chirurgie. By Dr. Albert Krecke 1368

Movable Kidney. By William Billington, F.R.C.S. 1368

On Nephritis. By A. Cecil Alport, M.R.C.P. 1368

Chemistry of Food and Nutrition. By H. C. Sherman, Ph.D., Sc.D. 1368

A Laboratory Handbook for Dietetics. By Prof. Mary S. Rose, Ph.D. .. 1369

Chemistry and Bacteriology of Public Health. By C. L. Dunn, D.P.H., and Prof. D. D. Pandya, D.P.H. 1369

Laboratory Diagnosis and Experimental Methods in Tuberculosis. By H. S. Willis 1369

Essentials of Histology. By Sir E. Sharpey Schafer, F.R.S. 1370

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CLINICAL RESULTS WITH ŒSTRIN 1372

ANNOTATIONS.

Hospital Assessment 1373

The Blood Count in Rheumatic Fever 1373

X Ray Apparatus 1374

The Action of Lead on the Chorionic Epithelium .. 1374

The Morale of the Blue-jacket 1375

The Study of Tropical Medicine 1375

A Memorial to John Thomson 1376

Treatment of Cataract and Glaucoma in Madras ... 1376

An Ideal Operating-table Lamp 1377

A Sculptor of Youth 1377

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.

Interpretation of Radiograms of the Alimentary Tract. V.—Large Intestines. By A. E. BARCLAY, M.D.—(*Illustrated*) 1377

SPECIAL ARTICLES.

King Edward's Hospital Fund for London 1380

Scotland: School Health Administration 1384

United States of America: Treatment of Drug Addicts in New York City 1384

Notes from India: The Yellow Peril 1385

OBITUARY.

Sir William Milligan, M.D.—(*With portrait*) 1393

PUBLIC HEALTH SERVICES.

Reports of Medical Officers of Health.—Durham.—Staffordshire.—Cheshire.—Hampshire.—Cumberland.—Huntingdonshire.—Rutland.—Guernsey.—Fife.—Dumfries 1386

School Medical Service: Blackburn.—Smethwick 1389

Infectious Disease in England and Wales 1390

THE SERVICES.

Royal Naval Volunteer Reserve.—Royal Army Medical Corps.—Royal Air Force 1386

CORRESPONDENCE.

The Approaching Changes in the Hospital System in this Country (Mr. Joseph Griffiths) 1390

Mutilating Operations (Dr. F. G. Crookshank) 1391

Nelson's Fatal Wound (Mr. W. R. Le Fanu) 1392

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics: The Mental Treatment Bill considered on Report.—Scottish Health Vote.—Hospitals and Motor Accidents.—The National Radium Fund 1394

House of Commons: Overcrowding in Greater London.—Aftercare of Mental and Physical Defectives in Scotland.—Health Insurance Administration.—Nursery Schools.—Overcrowding of Public Mental Hospitals.—Care of Mentally Deficient Children.—Hours of Industrial Employment.—Inspection of Vivisection Experiments 1396

MEDICAL NEWS.

University of Oxford 1397

University of Cambridge. 1397

University of Liverpool .. 1397

Royal College of Surgeons of Edinburgh 1397

University of Sheffield ... 1397

University of Edinburgh. 1397

The City Dispensary 1380

Johannesburg General Hospital 1392

Princesses at Hospitals .. 1397

A Hospital's Claims for Payment 1398

NOTES, COMMENTS, AND ABSTRACTS.

The Uses of X Rays 1398

Two Diaries for 1930 1398

Appointments 1397

Vacancies 1398

Births, Marriages, Deaths 1398

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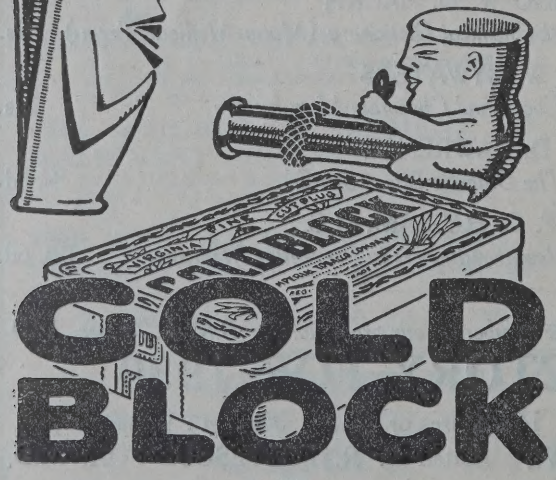

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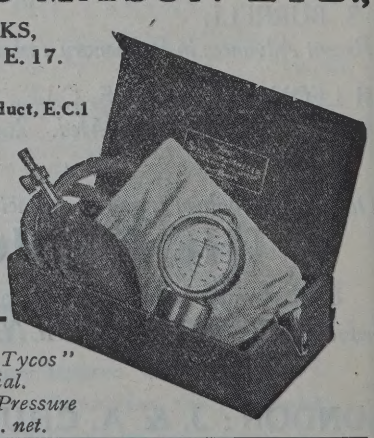

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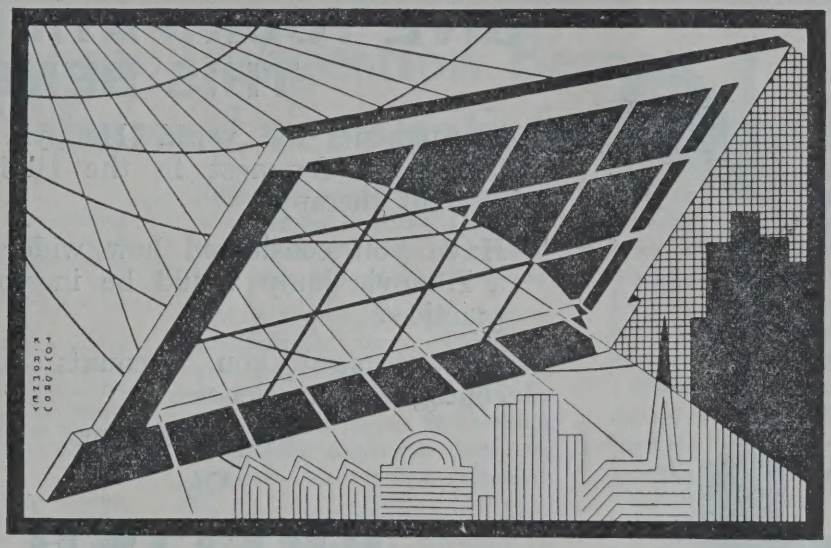

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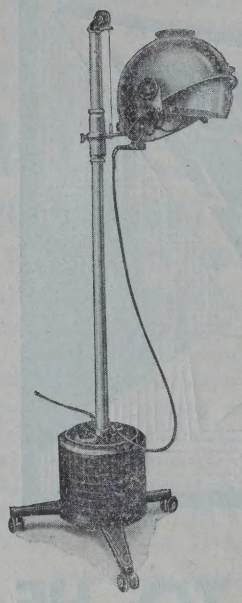

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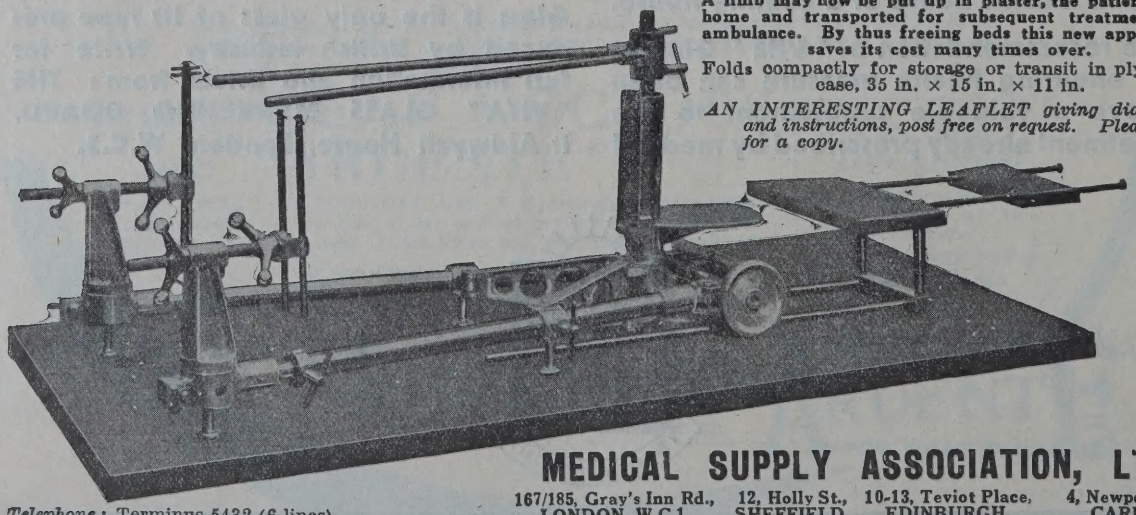

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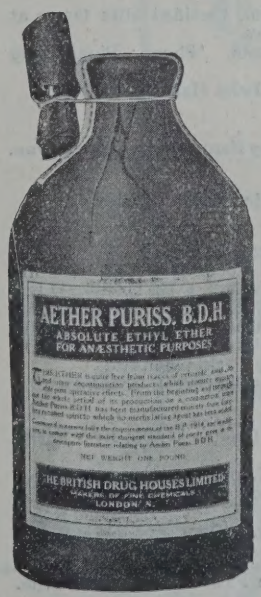

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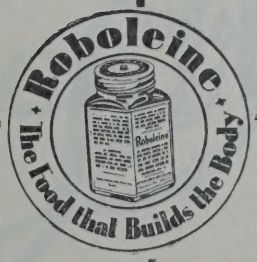

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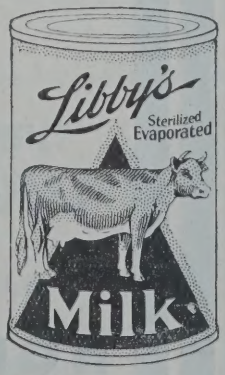

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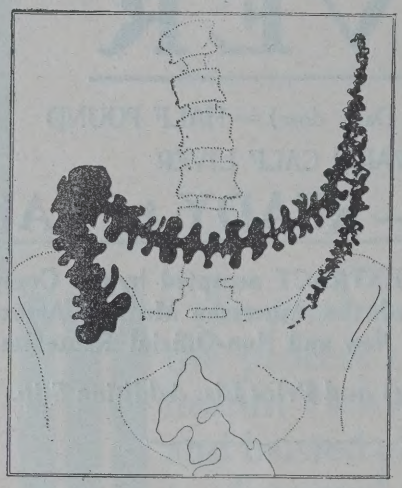
Occult Constipation



Occult constipation (from an X-Ray) 24 hours after opaque barium meal. There has been one small stool as usual. Note the deep haustrations and partial dilatation of the cæcum.

THE menace of occult constipation lies in the fact that the patient may have regular daily evacuations, and is therefore unaware of the constant retention of fæcal matter, which may ultimately form a hard and deep coating on the intestinal wall, leaving but a small passage through which painful and partial evacuation takes place.

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Radiograph of Knee-joint in Rheumatoid Arthritis

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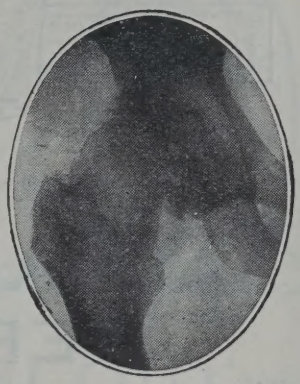

Radiograph of Hip-joint in Rheumatoid Arthritis

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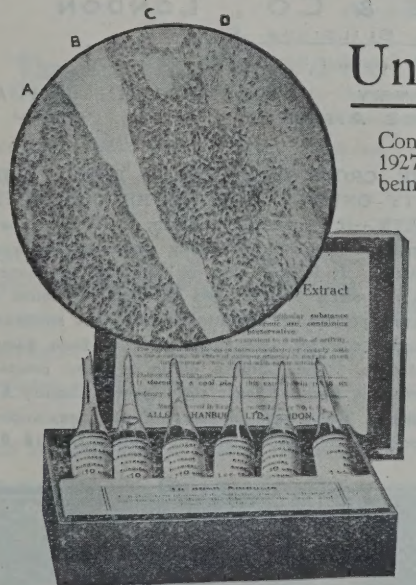

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Micro-photograph of section of Pituitary showing

(A) pars anterior **(C) pars intermedia (posterior lobe)**
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One product in solution produces 29·4 grains of sodium citrate

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DATE: Of the bas-relief: c. 100 B.C.
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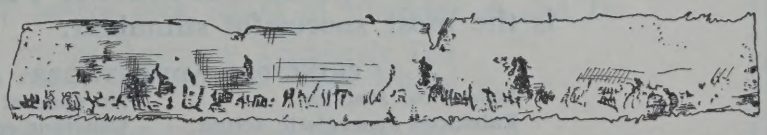

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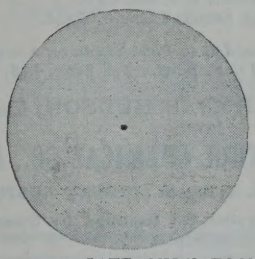

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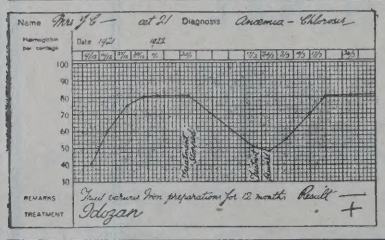

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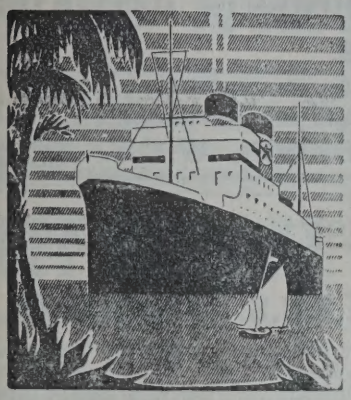

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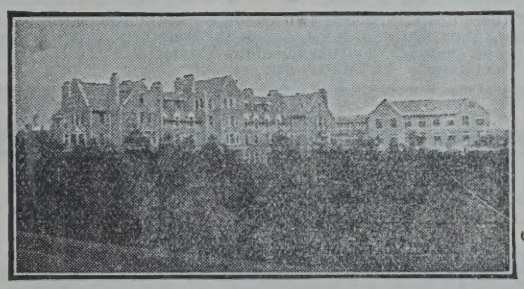

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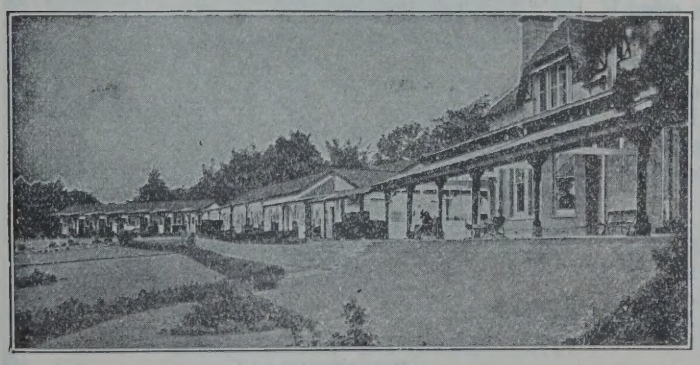

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HEATHERSIDE, CAMBERLEY.

RECENTLY OPENED FOR THE TREATMENT OF PULMONARY TUBERCULOSIS.

WELL SITUATED ON HIGH GROUND AND SURROUNDED BY PINES AND HEATHER.

RESIDENT MEDICAL SUPERINTENDENT: Dr. H. O. BLANFORD, late Medical Superintendent, King Edward VII. Sanatorium, Midhurst, to whom applications for particulars may be made.

RUTHIN CASTLE

(Formerly Duff House, Banff).

The first Private Hospital in the United Kingdom to be fully provided with a whole-time specially qualified Staff of Doctors, Analytical Chemists, Bacteriologists, Radiologists, Nurses, Dietists, Masseurs, and Masseuses, and a full equipment of Laboratories, X-rays, Electrocardiograph, Artificial Sunlight, and Medical Baths.

The Hospital is equipped for the diagnosis and treatment of any form of ill-health, except Mental and Infectious Diseases. The fees are inclusive.

The climate is mild and the neighbourhood beautiful.

Apply: THE SECRETARY, Ruthin Castle, North Wales.

Telegrams: CASTLE, RUTHIN. *Telephone:* 66 RUTHIN.

VALE OF CLWYD SANATORIUM.

This Sanatorium is established for the treatment of Tuberculosis of the Lungs and the Pleural Cavities. It is situated in the midst of a large area of park-land at a height of 450 feet above sea level, on the South-West slopes of mountains rising to over 1800 feet, which protect it from north and east winds and provide many miles of graduated walks with magnificent views. Average rainfall 29·57 per annum. Full day and night Nursing Staffs. X Ray plant. Every facility for Artificial Pneumothorax and for operations on the chest. Electric Lighting. Central Heating. Home Farm. Grade A Milk from T.T. Herd.

For particulars apply to Medical Superintendent:
H. MORRISTON DAVIES, M.D., M.Ch. (Cantab.), F.R.C.S., Llanbedr Hall, Ruthin, N. Wales.

DARTMOOR SANATORIUM. 750 FEET ABOVE SEA-LEVEL

Established 1903 for Treatment of Pulmonary and other forms of Tuberculosis. Sheltered Situation on the slopes of the bracing moorland. Radiographic Installation, Electric Light, Central Heating, Separate Bedrooms, Efficient Treatment combined with individual comfort and minimum restrictions. Illustrated Prospectus on request to the Resident Physician: C. H. BERRY, M.R.C.S., L.R.C.P., Dartmoor Sanatorium, Chagford, Devonshire. Telephone: 11 CHAGFORD.

THE RESIDENTIAL TREATMENT OF ALCOHOLISM & DRUG ADDICTION.

RENDLESHAM HALL

(Postal Address), WOODBRIDGE, SUFFOLK

RENDLESHAM HALL, which is open to receive patients, is essentially a Sanatorium. Its daily life and routine are that of an ordinary comfortable holiday or health resort, or of a large country house. Each patient has all the privileges of a guest consistent with the prescribed medical treatment.

Rendlesham Hall has 45 Bedrooms, and about 450 acres of Gardens and Park. It has also a private Nine-hole Golf Course, Tennis and Croquet Lawns, and Bowling Green.

Illustrated Booklet, giving particulars as to terms, etc., can be had on application to THE RESIDENT MEDICAL SUPERINTENDENT.

Telegrams and Telephones:
WICKHAM MARKET 16.
(Toll Call from London.)

RENDLESHAM HALL

To those desiring to be nearer London,

THE MANSION, BECKENHAM PARK, BECKENHAM,

as carried on for the last twenty years, is available.

Booklet and particulars from THE RESIDENT MEDICAL SUPERINTENDENT.

Telephone: BECKENHAM 1648. *Telegrams:* NOROTORIUM, BECKENHAM

Proprietors: THE NORWOOD SANATORIUM, LIMITED.

INEBRIETY.

Telephone: 16 Rickmansworth.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.,

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. Full sized billiards, tennis, croquet, bowls. Golf (Moor Park and Sandy Lodge) close by.—Apply to F. S. D. HOGG, M.R.C.S., &c., Res. Med. Supt.

ALCOHOLISM, OTHER DRUG HABITS, and TROPICAL Ailments

THE HARE NURSING HOME

As founded and established by the late Dr. FRANCIS HARE, for 20 years Med. Supt. of The Norwood Sanatorium, and author of "Alcoholism," etc.; for the treatment of ALCOHOLISM, other Drug Habits, Insomnia, Neurasthenia, Functional Nervous Disorders, TROPICAL Ailments, etc.

"THE OLD HILL HOUSE," CHISLEHURST, KENT.

Terms Moderate. Quiet and pleasant situation.
Ladies and gentlemen admitted for treatment.

For prospectus, etc., write or phone, WALTER E. MASTERS, M.D., M R C.S., D.P.H., Barrister-at-law (Res. Med. Supt.)
Phone: Chislehurst 451. Telegrams: "Masters," Chislehurst

ALCOHOLISM, DRUG HABIT and NEURASTHENIA.

BAY MOUNT, PAIGNTON.

Ladies and Gentlemen treated in small Private Home
EXCELLENT RESULTS FROM MODERN TREATMENT.
SPLENDID CLIMATE AMPLE AMUSEMENT
MODERATE INCLUSIVE TERMS.
Prospectus, report, etc., from STANFORD PARK, M.B., Ch.B., Res. Med. Supt. *Phone: Paignton 5110.*

FUNCTIONAL NERVOUS DISORDERS ALCOHOLISM and DRUG ADDICTION

at CALDECOTE HALL, NUNEATON.

This Mansion has been opened upon the most modern and scientific lines both physical and mental.
Resident Medical Superintendent—
A. E. CARVER, M.A., M.D., M.R.C.S., D.P.H., D.P.M.
Full particulars upon request.
Prospectus from the SECRETARY 40, Marsham Street, Westminster, S.W. 1.

DROITWICH SPA

Mild and invigorating Climate.

RAVEN HOTEL or PARK HOTEL

for Health and for Comfort. Cordial hospitality and First-class Cuisine await you.

Adjoining Brine Baths — the certain cure for Rheumatism. Special residential terms for Autumn and Winter. There are 230 rooms, magnificent grounds, lock-up garages and cars for hire. Illustrated booklet sent on request. 'Phone 50 or 38

PEEBLES HYDRO.

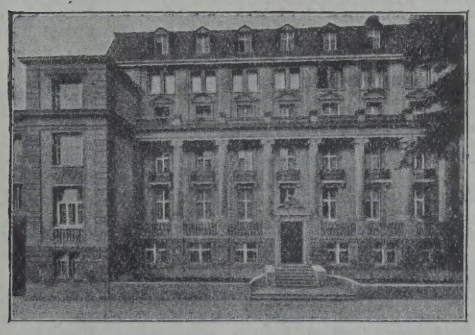
Beautifully situated 600 feet above sea level. Facing South, completely sheltered from North and East.
21 miles from Edinburgh.
All modern Baths, Douches, Massage and Electrical Treatment. Ultra-violet-Radiation. Physician in attendance.
IDEAL HEALTH RESORT.
Electric Light, Central Heating, Electric Lift, Three Billiard Tables, Ball Room, Winter Garden, Swimming Bath, Hard and Grass Tennis Courts, Badminton, Croquet Lawn, Golf Course.
Prospectus from Manager. 'Phone: Peebles 2.

BOURNEMOUTH HYDRO

Plombière Lavage, Electrical, Massage, and Thermal Treatment: Brine, Turkish, Nauheim, and Radiant Heat Baths.
DIATHERMY, ULTRA-VIOLET LIGHT.
Resident Physician—W. JOHNSON SMYTH, M.D. *Tel.* 341.

SMEDLEY'S HYDRO.

MATLOCK. Established. 1853.
Physicians: G. C. R. Harbinson, M.B., B.Ch.
R. MacLelland, M.D., C.M. (Edin.).
Prospectus and full information on application to the Manager.



C. von NOORDEN-KLINIK

Frankfurt-on-Main Schifferstrasse 80

Clinical Institution for the treatment of all Internal Disorders. Established in 1895 specially for dietary treatment of Diabetes and other allied diseases of metabolism, the gastro-intestinal tract, the heart and kidneys.

The clinic is fully equipped with every modern appliance for diagnosis and treatment.

Physicians in Chief: Geh. Rat Prof. Dr. Carl von Noorden and Prof. Dr. Louis R. Grote.

For full particulars apply to the Verwaltung der Klinik.

BOWDEN HOUSE, Harrow-on-the-Hill

A Nursing Home opened in 1911 for the investigation and treatment of Functional Nervous Disorders of all types. No cases under certificate. Thorough clinical and pathological examinations. Psychotherapeutic treatment, occupation and recreation as suited to the individual case.

Particulars from the Medical Superintendent.

Telephone } HARROW 0545.
Telegrams } „ 1898.

Mrs. DORA WELCH

High Colonic Irrigation for Intestinal Cases.
Plombières Douches as given at Plombières-les-Bains.
Subaqueous Bath and Chair as given at Tuebingen.
Trained Nursing Staff kept.
Male Attendant.

13, NEW CAVENDISH STREET
PORTLAND PLACE, W.1
Phone: LANGHAM 4115.

BOLNEY COURT, BOLNEY, SUSSEX.
(Haywards Heath Station 5 Miles.)

A Country House newly opened as a DIETETIC ESTABLISHMENT. Equipped with apparatus for treatment by Ultra-Violet Ray, Radiant Heat, Electric Blanket, High Frequency, Massage, Sitz Baths and Colonic Irrigation. FASTING ON SCIENTIFIC LINES. Resident Physician. Beautifully situated in its own grounds of 34 acres, 12 miles from the sea.

Brochure and further particulars from the Secretary.
Tel. Bolney 39.

BELVOIR NURSING HOME
Aston-on-Trent, DERBY
FUNCTIONAL NERVOUS DISORDERS AND CHRONIC MEDICAL CASES

The Home, a Georgian mansion, 14 miles from Nottingham and 6 miles from Derby, is for both sexes. In addition to the methods of general medicine, Psycho-Therapeutic treatment is used extensively in suitable cases. Certifiable cases are not received. Electrical Treatment, Radiant Heat, X-ray, and Ultra-violet Light is available in the Nursing Home. Billiards, tennis, &c. Fees from 5 to 12 guineas per week; for Chronic Medical Cases from 3 guineas a week. For further particulars apply to Dr. E. M. DOUGLAS-MORRIS, Aston, Derby. Telephone: Shardlow 16.

PRIVATE PATIENTS.

London County Council.—
Accommodation for Male Paying Patients is provided at the LONDON COUNTY MENTAL HOSPITAL, Claybury, Woodford Bridge, Essex.

The hospital is thoroughly equipped for modern treatment of certified cases.

Terms, exclusive of clothing and special luxuries, for patients having a legal settlement in the County of London, 44s. 11d. a week; for others, 48s. 5d. a week.

Full particulars from the Medical Superintendent, Claybury Mental Hospital, or from the Acting Chief Officer, Mental Hospitals Department, The County Hall, S.E.1.

Grove House, All Stretton, Church
STRETTON, SHROPSHIRE.

A PRIVATE HOME for the care and treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

Westminster Hospital, Broad
Sanctuary, S.W.1.—There is a vacancy for a HOUSE ANÆSTHETIST. The appointment is a whole-time one, and is of three or six months' duration. Salary £100 per annum (non-resident).

Applications should be submitted to the undersigned not later than Saturday, 4th January, 1930.

CHARLES M. POWER, Secretary.

St. John's Hospital, Lewisham, S.E.13.

Applications are invited for the appointment of RADIOLOGIST to this hospital. An honorarium will be given, and the successful applicant will be expected to attend at the hospital for three half-days a week. Fuller information regarding the appointment may be obtained from the Secretary at the Hospital, by whom applications must be received not later than December 31st.

Central London Ophthalmic Hospital,
Judd-street, St. Pancras, W.C.1.

There are vacancies for the posts of SENIOR and JUNIOR HOUSE SURGEON. Salaries at the rate of £120 and £100 per annum respectively, with board and residence in the Hospital.

Applications, with testimonials, from duly qualified candidates, must be sent to the undersigned on or before December 31st.

H. R. S. DRUCE, Secretary.

West London Hospital, Hammer-
smith-road, W.6.—Applications are invited for the post of ASSISTANT DENTAL SURGEON. Candidates are required to hold a Dental Diploma and be on the Dental Register, and also to hold some Medical or Surgical qualifications recognised by the General Medical Council of the United Kingdom; to send applications with copies only of testimonials so as to reach me not later than Wednesday, 22nd January; to attend a Meeting of the Medical Council on Friday, 24th January, at 4.30 P.M., and prior to that date call upon and send copies of their applications and testimonials to the Members thereof; to abstain from canvassing, but nevertheless to send copies of their application and testimonials to the Members of the Board of Management, who will elect on Tuesday, 28th January, 1930, at 5 P.M., when candidates (if notified) must be in attendance.

H. A. MADGE, Secretary.

Evelina Hospital for Children,
Southwark, S.E.—The Committee of Management requires a HOUSE SURGEON (Male) for seven months from 12th January (during first three months duty in Casualty and O.P. Dept). Salary at £120 per ann., with board and residence.

Candidates (duly registered) to send applications, giving age and qualifications (with dates), and copies of four testimonials, to the Secretary at the Hospital before 30th December.

Applicants will be informed if they will be interviewed by the Medical Committee. Selected candidates must attend Committee of Management. Time and place of meeting will be notified by the undersigned, from whom rules and other particulars relating to the post must be obtained.

By order of Committee of Management.
H. C. S. SMITH,
16th December, 1929. Secretary-Superintendent.

The Hospital for Sick Children,
Great Ormond-street, London, W.C.1.

A Part-time JUNIOR CASUALTY OFFICER is required on the 9th January, 1930, to assist in the Casualty Department from 10 A.M. to 3 P.M. (Saturdays 10 A.M. to 1 P.M.), under the direction of the Casualty Officer.

The work of this officer includes a large number of tonsillectomies and other minor operations.

Candidates must be registered Medical Practitioners and have held a responsible Hospital appointment.

Gentlemen are invited to send in their applications, addressed to the Secretary, before 12 o'clock on Monday, 6th January, 1930, accompanied by copies of not more than three testimonials written specially for the purpose.

The appointment is made for six months and is non-resident. Salary at the rate of £150 per annum, with luncheon.

All candidates must be in attendance to appear before the Joint Committee, if required, at their meeting on Wednesday, 8th January, 1930, at 4.45 P.M. precisely.

Forms of application and copies of the rules may be obtained from the Secretary at the Hospital.

By order of the Board of Management.
December, 1929. JAMES MCKAY, Secretary.

The Hospital for Sick Children,
Great Ormond-street, London, W.C.1.

A CLINICAL ASSISTANT MEDICAL OFFICER in the Venereal Department is required on the 13th January, 1930.

Gentlemen are invited to send in their applications, addressed to the Secretary, before twelve o'clock on Monday, the 6th January, 1930, with copies of not more than three testimonials given specially for the purpose.

Candidates must possess a legal qualification to practice, and the successful candidate will be appointed for six months and he will be eligible for re-election.

The Clinical Assistant Medical Officer in the Venereal Department will be required to attend on three afternoons a week from 2 to 4.30 P.M.

Salary at the rate of £1 1s. per visit or session.

All candidates must be in attendance to appear before the Joint Committee, if required, at its meeting on Wednesday, 8th January, 1930, at 4.45 P.M. precisely.

Forms of application and copies of the rules may be obtained from the Secretary.

By order of the Board of Management.
December, 1929. JAMES MCKAY, Secretary.

The London Female Lock Hospital,

283, Harrow-road, London, W.9.—The Board of Management invite applications for the appointment of HOUSE SURGEON (Male or Female) at the Female Lock Hospital. Salary at the rate of £150 per annum, with furnished rooms, full board, and washing. Candidates, who must be doubly qualified and duly registered, should send in their applications by January 6th, accompanied by copies of three recent testimonials, to the Secretary, from whom further particulars can be obtained. The appointment is for six months, commencing February 12th.

The London Female Lock Hospital,

283, Harrow-road, W.9. (Founded 1746).

HON. OBSTETRIC SURGEON.

The Board of Management invite applications for the above appointment. Copies of the laws relating to this appointment can be obtained from the Secretary. Applications, enclosing copies of not more than three testimonials, should be lodged with the undersigned on or before Jan. 6th, 1930. The appointment will be made at a special court of Governors on January 9th, 1930. By order of the Board.

H. J. EASON, Secretary.

Acton Hospital, W.3.

Appointment of Male RESIDENT MEDICAL OFFICER. Salary £150 per annum, with board, residence, and laundry. Candidates must be fully qualified and registered. Duties to commence about January 20th, 1930. Applications, stating age, nationality, and qualifications, together with copies of recent testimonials, should reach the Secretary, Acton Hospital, Gunnersbury-lane, Acton, by December 28th, 1929.

December 6th, 1929.

St. Mary's Hospital, W.2.

The post of ASSISTANT PATHOLOGICAL CHEMIST is vacant. Salary £300 per annum. The Board of Management invite applications from persons holding medical qualifications. Copies of testimonials not exceeding three in number should reach the undersignedon or before Tuesday, 31st December, 1929.

A copy of the regulations may be had on application. The appointment is in the first instance for one year, but the holder is eligible for re-appointment for two subsequent years.

By order.

W. PARKES, Secretary.

Queen Mary's Hospital for the

EAST END, Stratford, E.15.
Telephone: Maryland 2616.

CASUALTY OFFICER.

Applications are invited from fully qualified and registered Medical Men for the above post. Salary £150 per annum.

The Hospital contains 213 beds, including 46 Maternity Beds, and other special departments.

Candidates, who must have held previous Resident Appointments, must send applications, accompanied by testimonials, to the undersigned not later than Thursday the 2nd of January, 1930. RAPHAEL JACKSON (Major), Secretary.

Queen Mary's Hospital for the

EAST END, E.15.

Applications are invited for the post of HONORARY ASSISTANT SURGEON in Charge of the Ear, Nose and Throat Department at the above Hospital.

Candidates must be Fellows of a Royal College of Surgeons.

Applications, with copies of not more than three recent testimonials, should be forwarded to the undersigned on or before Wednesday, the 1st of January, 1930.

RAPHAEL JACKSON (Major), Secretary.

Charing Cross Hospital.

NON-RESIDENT HOUSE ANÆSTHETIST.

Applications are invited from those possessing registered qualifications for the above post.

The appointment will be made for the term of six months, and the holder will be eligible for re-election. Salary at the rate of £100 per annum.

Copies of the rules relating to the office can be obtained from the undersigned, to whom applications, with copies of two recent testimonials bearing witness to the candidate's experience in the administration of anæsthetics, must be delivered not later than Monday, December 30th, 1929, to

PHILIP INMAN, House Governor.

Charing Cross Hospital, Strand, London, W.C.2.

Bradford Children's Hospital.—House

SURGEON and HOUSE PHYSICIAN wanted immediately. Fully qualified. Salary £120 each, with board, residence, and laundry. Applications, stating age with recent testimonials, not later than December 31st to J. W. LONGLEY, Secretary.

Blackburn and East Lancashire Royal

INFIRMARY.

RESIDENT HOUSE PHYSICIAN (Male) required at a salary of £150 per annum, with board, residence, laundry, &c. In addition to Medical Wards to be attached to Eye, Ear, Nose and Throat Department.

The Hospital contains 240 beds, with X-ray, Massage, V.D., Eye, Ear, Nose and Throat Departments, Pathological Laboratory, &c. There is no outside work.

Applications, with copies of testimonials, stating age, nationality, experience, &c., to be sent to the undersigned.

NATHAN A. SMITH, General Supt. & Secretary.

Royal Infirmary, Blackburn.

The Royal Infirmary, Bradford.

RESIDENT SURGICAL OFFICER (Male) required to supervise the work of four House Surgeons and be generally responsible for the surgical work of the Hospital.

Candidates must be single and legally qualified, have had previous hospital experience, and be prepared to enter on duty at the beginning of February, 1930. Salary £250 per annum, with board, residence, and washing. There are 215 beds and six resident officers. Applications, stating age, qualifications, and previous experience, with copies of not more than three recent testimonials, to be received by the undersigned not later than Tuesday, 31st December.

J. J. BARRON, Secretary-Superintendent.

Salford Royal Hospital. (263 Beds.)

Applications are invited for the post of HOUSE SURGEON attached to the Orthopædic Department (Male).

Salary at the rate of £125 per annum.

The appointment is for a period of nine months ending 30th September, 1930, with board and residence.

Candidates must be registered under the Medical Acts.

The Hospital has the approval of the Royal College of Surgeons of England and appointments here are recognised for the English Fellowship (Final).

Forms of application, which may be obtained from the undersigned, must be delivered at once.

By order of the Board.

GEO. RUDDLE, General Superintendent and Secretary.

Salford Royal Hospital, Manchester, December 30th, 1929.

The Jessop Hospital for Women,

SHEFFIELD.

GYNÆCOLOGICAL AND MATERNITY DEPARTMENTS.
(145 Beds.)

The Board of Management invite applications for the appointment of TWO ASSISTANT HOUSE SURGEONS (Male) for six months from January 15th, 1930.

Salary £100 per annum, together with board, residence, and laundry.

Applications, stating age, with copies of recent testimonials, should reach the undersigned on or before January 6th, 1930.

H. B. SHELSWELL, Secretary.

Birmingham Union.

DUDLEY ROAD HOSPITAL.

GYNÆCOLOGIST AND OBSTETRICIAN.

Applications are invited from fully qualified Medical Practitioners for the above appointment.

The Hospital accommodation is fixed by the Guardians at 926, divided into Medical, Surgical, Children's, Infectious, Gynæcological, and Obstetrical Sections. There are completely equipped Pathological and Biochemical Laboratories, X Ray, Electrical, Massage, Sunlight, and Dental Departments.

Candidates for the appointment must have had previous Hospital experience of a similar nature and be Fellows of the Royal College of Surgeons (England).

The scale of salary will be £700, rising by annual increments of £50 to a maximum of £1000 per annum, and the salary of the successful candidate will be fixed within the scale according to experience and qualifications. Furnished quarters, rations, laundry, and attendance will be provided by the Guardians. Alternatively, a cash allowance will be paid if the officer appointed is non-resident. A deduction of 2 per cent. will be made from the salary and value of emoluments under the provisions of the Poor-law Officers' Superannuation Act, 1896.

The officer will be required to assist in the training and lecturing of nurses, and, should occasion arise, to attend at any of the other Institutions under the control of the Guardians.

Further particulars of the appointment may be obtained from the Guardians' Chief Medical Officer, F. W. Ellis, Esq., M.D., F.R.C.S., Dudley-road Hospital.

Applications, stating age, experience, and qualifications, accompanied by copies of recent testimonials, must be forwarded so as to reach me not later than 11 A.M. on Wednesday, the 8th January, 1930.

C. P. BEECH, Clerk to the Guardians.

Union Offices, Edmund-street, Birmingham.
20th December, 1929.

Durham County Mental Hospital.

Wanted, a JUNIOR MALE ASSISTANT MEDICAL OFFICER, with a sound knowledge of Bacteriology and Pathology, competent to take charge of Laboratory. Age not over thirty years, unmarried; must be fully qualified and duly registered.

Commencing salary £350 per annum, rising by annual increments of £25 to £450. If in possession of D.P.M. an additional £50, with board, lodging, washing, and attendance.

The appointment will be made under the provisions of the Asylums Officers' Superannuation Act, 1909, and for this purpose the emoluments are valued at £135 per annum.

Applications, stating age, qualifications, &c., with copies of three recent testimonials, will be received up to the 31st instant, and should be addressed to the Medical Superintendent, Winterton, Stockton-on-Tees, Co. Durham.

14th December, 1929.

Swansea County Borough.

MALE ASSISTANT MEDICAL OFFICER.

The Swansea Borough Council invite applications from duly qualified medical practitioners for the post of Male Assistant Medical Officer to assist with the Medical Services of the Corporation.

Hospital resident and special experience of refraction and ear, nose and throat work, school medical service, and maternity and child welfare experience, are desirable; the D.P.H. qualification, if additional to the foregoing, is also desirable. Salary £600 per annum, subject to the approval of the Board of Education and the Ministry of Health.

Applications, on special forms which can be obtained from Dr. Thomas Evans, Medical Officer of Health, Public Health Office, Swansea, to be sent in not later than December 31st, 1929.

County Borough of Great Yarmouth.

ASSISTANT MEDICAL OFFICER OF HEALTH AND ASSISTANT TUBERCULOSIS OFFICER.

Applications are invited for the position of Assistant Medical Officer of Health and Assistant Tuberculosis Officer. Salary £600 per annum.

The gentleman appointed will be required to devote the whole of his time to the service of the Corporation, and in addition to acting as Assistant Tuberculosis Officer will be required to assist in the general work of the Health Department, working for all purposes directly under the Medical Officer of Health, who is also Tuberculosis Officer.

Candidates must have had at least three years' experience of their profession since qualification, be able to show special experience in the diagnosis and treatment of tuberculosis, and should hold a Diploma in Public Health.

The appointment is subject to the approval of the Ministry of Health, and to the provisions of the Local Government and Other Officers' Superannuation Act, 1922.

Applications, stating age, marital state, qualifications, tuberculosis experience, and general experience, together with not more than three recent testimonials, should be delivered to the Medical Officer of Health, Town Hall, Great Yarmouth, marked "Assistant Medical Officer," not later than 4th January, 1930.

Dated this twelfth day of December, 1929.

W. EDGAR STEPHENS, Town Clerk.

Town Hall, Great Yarmouth.

Birmingham Union.

SELLY OAK HOSPITAL.

TWO CASUALTY OFFICERS (MALE).

Applications are invited from fully qualified Medical Practitioners for the appointments of Casualty Officers (Male) at the Selly Oak Hospital, Birmingham.

The present Hospital accommodation is 540 beds divided into General Medical, General Surgical, Gynæcological, Obstetrical, Children and Infectious sections. There is a completely equipped Pathological Laboratory, also X Ray, Electro-therapeutic, Massage, and Sunlight Departments. Over 2200 operations are performed annually.

The appointments will be for a period of six months in the first instance, but may be extended at the end of that time.

The officers appointed will be required to assist at operations, administer anæsthetics, and undertake casualty work, and such other duties as may be assigned to them by the Medical Superintendent, and, should occasion arise, to assist at any of the other Institutions under the control of the Guardians.

The salary attached to the appointments is at the rate of £200 per annum, together with full residential emoluments (rations, apartments, laundry, and attendance).

A deduction of 2 per cent. will be made from the salary and value of emoluments under the provisions of the Poor Law Officers' Superannuation Act, 1896, and for this purpose the emoluments are valued at £200 per annum.

Further particulars of the appointments may be obtained from the Medical Superintendent, Mr. R. P. Stanley Kelman, M.B., F.R.C.S. (Eng. & Edin.), at the Selly Oak Hospital.

Applications, stating age, experience, and qualifications, accompanied by copies of recent testimonials, must be forwarded so as to reach me not later than Wednesday, the 8th January, 1930. C. P. BEECH, Clerk to the Guardians.

Union Offices, Birmingham, 12th December, 1929.

Rochdale Infirmary and Dispensary

(110 Beds).—Wanted, JUNIOR HOUSE SURGEON (Male). Salary £175 per annum, including board, residence, and laundry. Applications, stating age, nationality, &c., together with copies of three recent testimonials, to be sent to the Secretary, endorsed "House Surgeon." Conditions of appointment may be had on application to the Secretary.

Infirmary Office, Rochdale. W. WYNNE, Secretary.

Northampton Education Committee.

ASSISTANT SCHOOL DENTIST.

Applications are invited for the appointment of a fully qualified Dental Surgeon (Man or Woman) as Assistant School Dentist. Salary £450 per annum.

Further particulars and forms of application may be obtained from the undersigned, by whom applications should be received by not later than 3rd January, 1930.

A. C. BOYDE, Director of Education.

Education Office, 4, St. Giles'-street, Northampton.

Bolton Union.

TOWNLEYS HOSPITAL.

Wanted for the Townleys Hospital, Farnworth, near Bolton, a SECOND ASSISTANT MEDICAL OFFICER (Male) for a period of one year.

The salary will be at the rate of £225 per annum, and rations, furnished apartments, attendance, washing, &c.

The Hospital has accommodation for 550 patients, is a recognised training school for nurses, and has a Medical Superintendent and three resident Assistant Medical Officers.

Forms of application, together with conditions of appointment (for which a stamped addressed foolscap envelope must be enclosed), may be obtained from me.

Last day for applications, 6th January, 1930.

H. I. COOPER, Clerk to the Guardians.

28, Mawdsley-street, Bolton. 13th December, 1929.

County Borough of Southampton.

APPOINTMENT OF SCHOOL DENTIST.

Applications are invited for the position of an Assistant School Dentist to carry out the dental examination, treatment, &c., of elementary school children.

The gentleman appointed must be fully qualified and registered. He will hold office during the pleasure of the Council, and will be required to devote the whole of his time to the duties of the office and to act under the direction of the School Medical Officer.

Salary £450 per annum.

The Local Government and Other Officers' Superannuation Acts, 1922, will be applicable to the appointment, and contributions to the Superannuation Fund will be deducted from the salary. The selected candidate will be required to pass a satisfactory medical examination.

The appointment will be determinable by two months' notice on either side.

Forms of application may be obtained from the Medical Officer of Health, Municipal Offices, Southampton.

Application on the prescribed form, endorsed "School Dentist," together with copies of not more than three recent testimonials, must be delivered at the Town Clerk's Office, Municipal Offices, Southampton, on or before the 4th January, 1930. R. RONALD H. MEGGESON, Town Clerk.

Birmingham Union.

MONYHULL COLONY.

RESIDENT ASSISTANT MEDICAL OFFICER (FEMALE).

Applications are invited from fully qualified Medical Practitioners for the above appointment at Monyhull Colony, King's Heath, Birmingham. Candidates should have held House appointments, and experience with mental patients will be an added qualification.

The Colony accommodates approximately 1200 epileptic and feeble-minded patients, and comprises Adults' and Children's Sections. The Colony is certified under the provisions of the Mental Deficiency Acts, 1913 to 1927, and the Education Act, 1921.

The person appointed will be required to assist in the general medical work of the Colony, and to undertake such other duties as may be assigned to her by the Guardians or the Medical Superintendent, and, should occasion arise, to assist at any other Institutions under the control of the Guardians.

The minimum and maximum of the scale of salary attached to the appointment are £250 and £350 per annum, respectively, and the salary of the successful candidate will be fixed within these limits according to qualifications and experience. In addition, full residential emoluments will be provided. A percentage deduction will be made from the salary and value of emoluments in respect of superannuation, and for this purpose emoluments are valued at £200 per annum.

Applications, stating age, experience, and qualifications, accompanied by copies of recent testimonials, should be forwarded to me as soon as possible, and in any case not later than Saturday, 4th January, 1930.

Canvassing the Guardians, directly or indirectly, will disqualify.

C. P. BEECH, Clerk to the Guardians.

Union Offices, Edmund-street, Birmingham.

16th December, 1929.

INDIAN MEDICAL SERVICE

RECRUITMENT OF EUROPEAN OFFICERS

Applications are invited from Medical Men for permanent commissions in H.M.'s Indian Medical Service. The terms offered include a gratuity of £1,000 on retirement after six years' service or £2,500 after 12 years' service, together with free return passages for those who no longer desire to remain in the Service. In other respects the terms will be as detailed below.

Candidates must be British subjects under 32 years of age at the time of application and must be registered under the Medical Acts in force in Great Britain and Northern Ireland.

CAREERS.

The Indian Medical Service offers wide opportunities of medical experience, including clinical, preventive, specialist, and research work. At the beginning of his career an officer is employed on the military side which has medical charge of the Indian Army. Promotion is on a time scale up to the rank of Lieutenant-Colonel, and by selection to the ranks of Colonel and Major-General. An officer may apply after two years' Indian Service for transfer to the civil side, from which appointments are made to Civil Surgeoncies, which are established at the principal civil centres to provide for the medical needs of Civil Officials and for general medical administrative purposes; to specialist (e.g., Public Health and Bacteriological) services; to research posts; and to professorships at the Medical Schools.

PAY

The monthly rates of pay for European officers in the Service who have a "non-Asiatic" domicile are as follows:—

Rank.	Service in Rank.	Basic Pay.	Overseas Pay.	Year of Total Service.
1	2	3	4	5
		Rs.		
Lieut...	—	500	Rs.150	1st
			150	2nd
			150	3rd
Capt...	(i) During first 3 years' service as Captain ..	650	150	4th
			£15	5th
			15	6th
	(ii) With more than 3 and less than 6 years' service as Captain	750	25	7th
			25	8th
			25	9th
	(iii) With more than 6 years' service as Captain	850	25	10th
			25	11th
			30	12th
Major..	(i) During first 3 years' service as Major ..	950		
	(ii) With more than 3 and less than 6 years' service as Major	1100		
	(iii) With more than 6 years' service as Major..	1250		
Lt.-Col.	(i) Until completion of 23 years' total service ..	1500	30	13th and over.
	(ii) During 24th and 25th years' service	1600		
	(iii) After completion of 25 years' total service ..	1700		
	(iv) When selected for increased pay	1850		

Extras.—In addition to the above rates various allowances are admissible for a large number of special appointments on both the military and the civil side which may be held by members of the Indian Medical Service. Special high rates of pay are also attached to the numerous administrative appointments open to officers in both branches of the Service.

WAR SERVICE CONCESSIONS.

Any service rendered by an officer during the War as a medical or combatant officer or in a position usually filled by an officer may be counted as service for increments of pay, promotion, retirement and retired pay, but not for gratuity.

One half of any service in the ranks during the War may be counted as service for retirement and retired pay only.

OUTFIT ALLOWANCE.

Officers on appointment will receive an outfit allowance of £50.

PRIVATE PRACTICE.

With the exception of Administrative Officers, military or civil, and officers holding certain special appointments, officers are not debarred from taking private practice, so long as it does not interfere with their proper duties.

PENSIONS.

The rates of pension are as follows:—

	Per annum.
After 17 years' service for pension	£400
„ 18 „ „	430
„ 19 „ „	460
„ 20 „ „	500
„ 21 „ „	540
„ 22 „ „	580
„ 23 „ „	620
„ 24 „ „	660
„ 25 „ „	700
„ 26 „ „	750
„ 27 „ „	800

These rates are subject to alteration on account of a rise or fall in the cost of living as compared with the year 1919, to an extent not exceeding 20 per cent. in all, the revision being undertaken triennially. With effect from July 1st, 1927 a reduction of 4½ per cent. has been made on this account from the amounts shown.

There are additional pensions ranging from £65 to £350 per annum for officers who have held administrative appointments.

PASSAGES.

An officer on appointment is provided with a free passage to India. The wives and families of officers who are married prior to the date of the officers' embarkation on first appointment will also be provided with free passage to India subject to the payment of messing charges.

Officers and their families are also eligible for passage concessions under which they are granted a certain number of return passages home at Government expense during their service.

INSTRUCTION PRIOR TO EMBARKATION.

Officers are required to undergo courses of instruction at the Royal Army Medical College and at Aldershot, lasting approximately six months, prior to their embarkation for India on first appointment.

Full details regarding these appointments and forms of application may be obtained from the UNDER-SECRETARY OF STATE FOR INDIA, MILITARY DEPARTMENT, INDIA OFFICE, LONDON, S.W.1. Applications should be submitted as soon as possible. The Selection Committee will meet early in January to make nominations, and the selected candidates will be required to attend a course of instruction commencing on or about the 1st February, 1930

Victoria Hospital, Burnley.

Wanted, HOUSE SURGEON (Male), fully qualified. Appointment six months. Salary £125 per annum, with board, lodgings, and washing. Applications may be sent in at once to F. A. HARGREAVES, Hon. Secty., 7, Grimshaw-st., Burnley.

N.B.—This Hospital is approved by the London University for the purpose of the M.B. and M.S. examination.

Kent and Canterbury Hospital,

Canterbury. (120 Beds.)

HOUSE SURGEON (Male) required. Six months' appointment. Duties to be taken up early in January.

Salary £125 per annum, plus board, residence, and washing.

Applications, accompanied by testimonials and stating age, qualifications, &c., should be forwarded to the undersigned as soon as possible. W. T. SOUTHWOOD, Secretary.

Kent and Canterbury Hospital,

Canterbury. (120 Beds.)

HOUSE PHYSICIAN (Male) required. Six months' appointment. Duties to be taken up early in January.

Salary £125 per annum, plus board, residence, and washing.

Applications, accompanied by testimonials, and stating age, qualifications, &c., should be forwarded to the undersigned as soon as possible. W. T. SOUTHWOOD, Secretary.

Bootle Borough Hospital, Derby-road, Bootle.

APPOINTMENT OF HONORARY LARYNGOLOGIST AND AURIST.

Applications are invited for the above vacancy. Candidates are requested to send particulars of their qualifications and experience, accompanied by testimonials, to the undersigned not later than 10th January, 1930.

J. A. BEARDSALL, Secretary-Superintendent.

Ancoats Hospital, Manchester.

ASSISTANT PATHOLOGIST required, which, with a co-existing Research Appointment, will allow of a salary of £350 per annum. Applications, stating age, experience, qualifications, appointments held, &c., to be forwarded to the undersigned on or before 3rd January, 1930, together with copies of three recent testimonials.

By order of the Board.

HERBERT J. DAFFORNE, Gen. Supt. and Secretary.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.

—Applications are invited for the post of SENIOR RESIDENT MEDICAL OFFICER. Appointment is for six months from February 1st, 1930. Salary at the rate of £125 per annum, with laundry. Only candidates with previous Hospital experience need apply.

Applications, together with copies of testimonials, should be sent to the undersigned, marked "R.M.O.," by Wednesday, January 15th, 1930. ANGELA LOPEZ, Secretary.

Wigan Infirmary.—Wanted, for six months, a THIRD HOUSE SURGEON (Male).

Salary £150 per annum, with board, apartments, and washing. Candidates are requested to state if they would be willing to remain a further period of twelve months, subject to satisfactory service — i.e., six months as Second House Surgeon, and six months as Senior House Surgeon, in the latter instance at an increased remuneration. Applications, stating age, nationality, and qualifications, with copies of three testimonials, should reach the undersigned as soon as possible.

A. STANLEY BRUNT, General Supt. and Secretary.

Hull Royal Infirmary. (272 Beds.)

Applications are invited for the following posts :—

THIRD HOUSE SURGEON, now vacant. Salary £150 per annum with board, residence, and laundry.

ASSISTANT HOUSE PHYSICIAN, now vacant. Salary £130 per annum, with board, residence, and laundry.

Both appointments will be for six months in the first instance, terminable by one month's notice on either side.

Applications should be sent to the undersigned.

R. J. CARLESS, House Governor.

21st December, 1929.

Joint Nursing and Midwives' Council, NORTHERN IRELAND.

EXAMINATION OF MIDWIVES.

The above Council, being about to revise their list of Examiners, invite applications from registered Medical Practitioners, including Women, who would be willing to act. Preference will be given to applicants resident in Northern Ireland. Particulars on application to the Registrar, 118, Great Victoria-street, Belfast, to whom applications should be sent not later than 9th January, 1930.

The West Cornwall Miners' & Women's HOSPITAL, Redruth, Cornwall.

— RESIDENT MEDICAL OFFICER (Female) required early in the New Year, with experience of X ray work. Salary £200 per annum, with rooms, board, and washing.

Apply not later than 15th January, 1930, with copies of three recent testimonials, to the Secretary, from whom further particulars may be obtained.

Newark Hospital & Dispensary (50 beds).

—Wanted, a fully qualified RESIDENT HOUSE SURGEON (Male). Salary £150 per annum, with board, residence, and laundry. Appointment for six months or twelve if mutually desired. For form of application apply to W. T. Crampton, 27, Kirk Gate, Newark, Notts.

University of Leeds.

The Council will shortly proceed to the appointment of a TUTOR IN OBSTETRICS AND GYNÆCOLOGY. Salary £475 a year. Candidates should have resident experience in both subjects. Further particulars may be obtained from the Registrar, The University, Leeds, who will receive applications for the appointment up to the 10th January.

Prince of Wales' Hospital, Cardiff.

CROSSWAYS COUNTRY BRANCH.

HOUSE SURGEON required 1st February, 1930, for Crossways Country Branch Orthopædic Hospital; previous Hospital Surgical appointment desirable. Salary £120 per annum, with board and laundry.—Apply, with copies of three recent testimonials by January 4th, 1930, to the Secretary, Prince of Wales' Hospital, Cardiff.

Walsall General Hospital.

The Committee invite applications from men for the post of CASUALTY HOUSE SURGEON, salary £120 per annum.

Candidates must be registered under the Medical Acts and produce three recent testimonials.

The appointment will be for six months.

The Hospital contains 100 beds and is equipped in all special departments.

Applications must be received by the undersigned immediately. WALTER FRANCOMBE, Secretary.

9th December, 1929.

India.— Medical Man, preferably ex-H.S.

or with other Surgical experience, abstainer, and in full sympathy with Medical Missionary work, required on agreement for a well-equipped Missionary Hospital in the United Provinces. Married or Single.—Apply, C.M.O., 5, Warltersville-road, N.19.

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Bacteriological and Pathological Laboratories, can obtain trained, efficient, and experienced Women Laboratory Assistants, who are also legally qualified Dispensers. Preparation for Examinations.—Apply, London College of Pharmacy for Women, Westbourne Park-road, W.2.

Wanted, Situation as Secretary to

doctor or hospital. Expert stenography and typewriting, knowledge of French, German, and Spanish.—Address, Miss R. D. L. Gould, 31, Fordhook-avenue, Ealing Common, W.5.

Typewriting undertaken by Expert.

Testimonials, Theses, &c. Numerous letters of appreciation from Doctors. 'Phone: Primrose Hill 0803, or write Beatrice Radford, c/o 487, Finchley-road, N.W. 3.

Wanted, Partner in residential

Practice. Country, one hour from London. Average £2000. Small panel. Two-fifths share. Two years' purchase.—Address No. 731, THE LANCET Office, 7, Adam-street, Adelphi, W.C.2.

Required by a Medical Practitioner, recently retired from a large high-class practice in London, a Partnership or Salaried Assistantship in the City.
Address, No. 736, THE LANCET Office, 7, Adam-street, Adelphi, W.C.2.

To Purchasers.—Do not Buy without expert assistance. With forty years' experience, Mr. PERCIVAL TURNER can advise in all cases. Terms free on application to 4, Adam-street, Strand, W.C.2. Telephone: Temple Bar 9011. Telegrams: "Epsomian, London."

Northern City. — Well-established PRACTICE. Receipts average nearly £1000 per annum. Panel over 900. Rent of premises £75 per annum, lease granted. Premium £1100.—Apply, Peacock & Hadley, Ltd., 19, Craven-street, Strand, W.C.2.

For Disposal.—A good Practice is not always to be had directly, but Mr. PERCIVAL TURNER can generally offer applicants something suitable. Nearly all the best practices are sold by him without being advertised.—Full information free on application to 4, Adam-street, W.C.2.

London, S.E. (15 minutes Charing Cross).—Cash and panel PRACTICE in densely populated district. Receipts about £1400 per annum. Panel 750. House rent £78 per annum. Premium £2000, cash preferred.—Apply, Peacock & Hadley, Ltd., 19, Craven-street, Strand, W.C.2.

East Lancashire Town.—Old-established PRACTICE (over 88 years) for sale. Owner desirous of retiring from practice. Cash receipts approximating £2500 per annum. Good middle-class and panel Practice, capable of development. Panel about 2250. Good house, garage, up-to-date waiting and consulting rooms and dispensary, which would be sold or let on lease. 2 years' premium required for purchase of Practice. Chartered Accountant's certificate available.—For further particulars address, No. 733, THE LANCET Office, 7, Adam-street, Adelphi, W.C.2.

Well-established Mixed-class Practice situated in a rapidly developing district. 20 minutes from Golders Green. Receipts last twelve months nearly £500, including panel of 400, steadily increasing. Excellent house on lease, rent £150 per annum, covered by subletting. Premium moderate.—Apply, Peacock & Hadley, Ltd., 19, Craven-street, Strand, W.C.2.

Well-equipped Plombières, Massage and Sunlight CLINIC, FOR SALE as a going concern in north of England.—Particulars, apply, Principal, 673, Borough-road, Birkenhead.

London, S.W. — Death Vacancy.—Well-established PRACTICE. Receipts average £1200 per annum, panel about 1560. Fine corner house, separate entrance to surgery. Price for house and Practice £3000.—Apply, Peacock & Hadley, Ltd., 19, Craven-street, Strand, W.C.2.

Surrey (between Ewell and Epsom). Well-built RESIDENCE, standing on high ground in central position. 12 mins. stations. Large hall, 3 reception rooms, excellent kitchens and offices, cellars, 12 bedrooms, box-rooms, 3 bathrooms. Double garage with bedroom and loft. Electric light, central heating, main drainage. 2½ acres pleasure grounds. Bargain. Price £4,000 Freehold, or offer with less ground. Suitable for Doctor or Institution, &c.—Wiltshires, Ewell Estate Office, Ewell. 'Phone: Epsom 672.

Consulting Rooms to Let, Harley-street and district, whole or part time. Lists sent on application.—Elgood & Co., 10, Henrietta-street, Cavendish-square, W.1. Tel.: Mayfair 5659.

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Eastern Counties.—About £2400 p.a. Old-estab. 1/3 share for sale. Panel over 1600. Appts. £100 p.a. Good house to rent. Prem. only 1¾ years', part down. No. 8584.

London, S.W.—Mid. and Upper-class non-panel PRACTICE. About £850 p.a. Visitx 5/- to 21/-. Suitable as Lock-up. Prem. 1 year or offer.—No. 8583.

Hants, Country.—About £700 p.a. Gen. Mixed PRACTICE. Visits 3/6 to 10/6. Panel about 300. Mids. from 3 gns. Appts. £500 p.a. House, 4 bed., &c., rent or buy.—No. 8582.

N.W. Scotland.—About £860 p.a. Panel and appointments about £614 p.a. Good det. house, 3 recept-rooms, 4 bed., &c., garage and garden, to rent. Prem., including furniture, only £1200.—No. 8577.

Cheshire Town Practice. Income about £1000 p.a. Private Practice about £6 per week. Panel over 1600. Urgent sale.—No. 8581.

Eastern Counties.—1/4 Share of £4400 p.a. after prelim. asscy. Option to increase later. Panel 3265. Visits 3/6 to 15/-. Young Englishman or Scotsman, single, preferred.—No. 8579.

Glos.—Over £750 p.a., increasing annually. Clubs £40 p.a. Panel 550. Mids. 2 to 10 gns. Visits 3/- to 10/6. Good house, 5 bed., &c.—No. 8578.

S. Wales Resort.—£1400 p.a., increasing annually. Mixed-class. Panel 607. Appts. £60. Mids. 3 to 10gns. Visits 3/6 to 21/-. Good house and garden.—No. 8575.

Wiltshire.—About £1000 p.a. Small panel No Midwifery. Appt. £20 p.a. Visits 5/- to 10/6. Suitable House to rent at £70 p.a.—No. 8574.

Eastern Counties.—Asscy. with view to Partnership. 1/3 of £3300 p.a. Panel over 1300. Appts. £280 p.a. Mids. 2–10 gns. Visits 5/- to 31/6, &c. Suitable accommodation.—No. 8573.

Home Counties.—Country Town. Share worth £1000 or more p.a. in old-estab. Practice. Appts. £250 p.a. Panel over 2700. Personally visited.—No. 8563.

Lancs.—1/3 or 1/2 Share of over £2400 p.a. Preliminary Assy. Panel £500. Mixed-class. Good house, 4 beds., attics, &c.—No. 8454.

London, E.—£850 p.a. Old-estab. Visits 5/- to 10/6. Very little midwifery. Panel over 500. Small house to let £60 p.a.—No. 8562.

Continental Coastal Practice. About £450 p.a. Visits 10/6 to 21/-. Cons. 5/- to 10/6. No appts. or mids. Good flat to rent, 3 bed., &c.—No. 8561.

London, N.W.—Over £900 p.a. Cash and panel of over 800. Visits 3/6 up. Corner house, 6 rooms, surgery, &c.—No. 8560.

Lancs.—£4000 p.a., increasing. Panel over 2650, Fees 2/6 to 7/-. Mids. 2–5 gns. Suitable for two. Two adjoining houses to rent or buy. Prem. including drugs, book-debts, surgery furniture, &c., only £5250.—No. 8509.

Herts.—Country.—Nearly £1000. Panel 470. Appts. £54. Residential. Good fees. House with g od surgery, 6 bed., garden, &c.—No. 8556.

West of England Town.—Share worth £900 p.a. of which £600 is from panel and appts. House, with 7 beds., &c., to rent.—No. 8552.

Midlands Industrial.—Over £1500 p.a. with ample scope. Panel about 1700. House to rent at £56.—No. 8546.

Dorset.—Av. £2300 p.a. 1/2 Share for sale. Good appts. Small panel. House, 6 bed., &c., and garden, to rent. No. 8537.

Liverpool.—£1300 p.a. Visits 3/6–5/-. Mids. 3–4 gns. Panel 560. House. 4 bed., &c., and garden.—No. 8536.

N. Wales Borders.—£4000 p.a. 1/3, 1/2 or 2/3 Share. Panel 3800. Appts. worth £1600 p.a. Visits 5/- up. About 50 Mids. at £2 2s. House (4 bed., &c.) to rent or buy.—No. 8519.

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PRACTICES AND PARTNERSHIPS FOR SALE.

1. PARTNERSHIP.—County Town within easy reach of London.—A one-third share is offered, owing to retirement through ill-health of one of two partners, in an old-estab. better-and mixed-class Practice, averaging over £3600 p.a., including panel of 1100. Fees 3s. 6d. to 42s., med. extra. Good house with 3 reception, 6 bedrooms, &c. Garden. Rent on lease, £83 p.a. Excellent society, sport, and schools. Premium £2700, to include share of surgery
2. MANCHESTER DISTRICT.—Old-estab. middle-and working-class PRACTICE, worth last year about £700, including panel of 590, and capable of increase. Expenses small. Well-situated house with 6 rooms in addition to professional rooms. Large garden. Price freehold, £850. Moderate premium accepted.
3. NORTHANTS.—Unopposed old-estab. Country PRACTICE within easy reach of large town, worth last year over £1500, including panel (with mileage) £675 and appts. about £80. Visits 5s. to 20s., med. sometimes extra. Suitable house available. Rent £70 p.a. Premium 1½ years' purchase. Held by Vendor (retiring) over 30 years. Sport of all kinds.
4. SOUTHERN COUNTY.—PARTNERSHIP.—Third share of very old-established increasing Practice, situated in a beautiful residential and agricultural district within 10 miles of the sea. Cash receipts this year (to date) over £3000, including panel and appointments. Visits 5s. to 21s. Suitable house can be arranged for ingoing partner. Premium 2 years' purchase. District is developing rapidly and offers good scope.
5. DEATH VACANCY.—NORTH WALES.—Easily worked PRACTICE, offering large scope, and situated in a beautiful seaside and country district. Cash receipts for this year to date, £800. Very convenient well-situated house, with ample accommodation. Rent £85 p.a. Premium £1200 or near offer. Efficient locum in charge.
6. PARTNERSHIP.—NORTH-WEST LONDON.—Desirable residential suburb. A one-fourth share, with increase up to one-half in a short time, is offered in a very old-established non-panel non-dispensing Practice, averaging about £6000 p.a. Fees 7s. 6d. to 10s. 6d. Large double-fronted residence can be purchased, or smaller accommodation secured if preferred. Premium 2 years' purchase.
7. YORKS.—Large Town.—Very old-estab. middle- and working-class PRACTICE, offering exceptional scope for increase. Income for last year £1500. Panel of over 1700. Visits 4s. 6d. to 5s. Conveniently situated house, with 2 reception, 4 bedrooms, &c. Rent on lease £56 p.a. Premium £2250. Ill-health reason for sale.
8. WILTSHIRE.—Very pleasant Village, in beautiful surroundings, and within easy reach of good town. Income last year £1100. Panel of 445. Fees 2s. 6d. to 21s. Exceptionally picturesque house, with 3 reception, 4 bedrooms, 2 maids' rooms, &c. Electric light and gas. Garage for two cars. Half an acre of garden. Price for freehold £2000. Premium £1400.
9. EASTERN COUNTIES—LARGE TOWN.—Sound good middle-and working-class PRACTICE, producing last year nearly £1900, including panel of 2300. Fees 3s. 6d. to 10s. 6d., medicine etxra. No Midwifery. Specially built house, easily run and with every modern convenience. Contains 2 reception, 5 to 6 bedrooms, &c., and good professional accommodation. Garage. Garden. Price for freehold £3000, half on mortgage. Premium 1½ years' purchase.
10. KENT.—Old-estab. Country PRACTICE, in favourite locality, and within 5 miles of the coast. Income for past 12 months £1185, and increasing. Visits 5s. to 21s. Panel of about 380. Appts. worth about £50 p.a. Convenient house, with ample accommodation. Nice garden. Price for freehold, £1800. Premium 1½ years' purchase.
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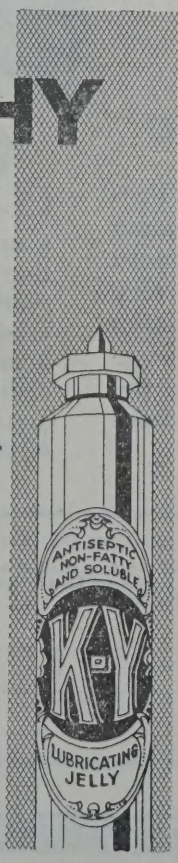

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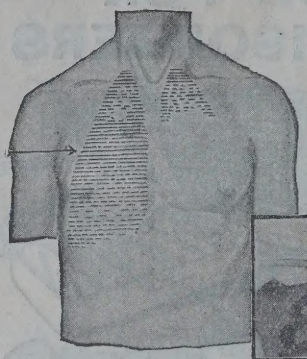

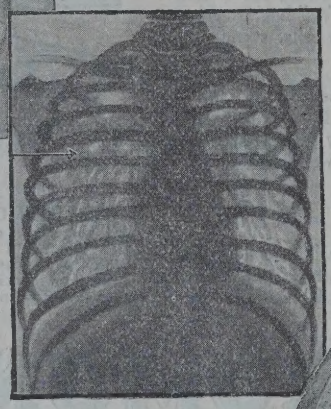

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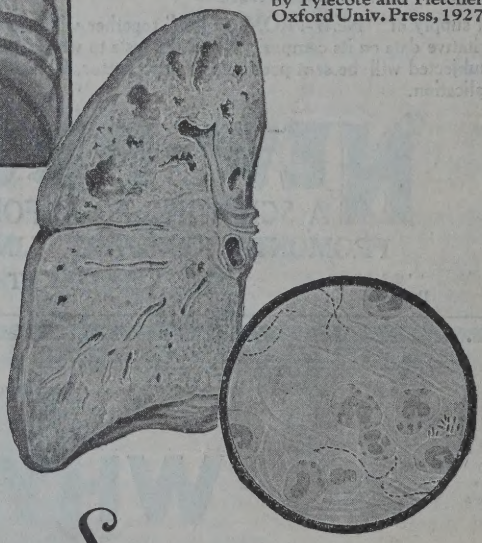

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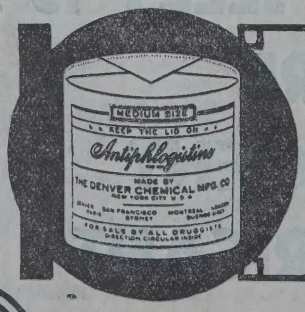

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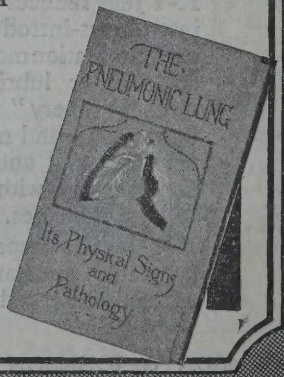

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